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The Public Lighting Tables of the American Meter Company will be found in the page advertisement of that Company.

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[NOTICE.]

Wrinkle Department, the American Gas Institute.

To the Membership, American Gas Institute: All members of the American Gas Institute, and others interested, are requested to contribute a description of any novel device or scheme covering any feature of the gas business. Every department of every company uses some novel stunt which would be of value to others. The object of this department is to compile such information. The value of the report depends entirely on the co-operation received. Send in your contribution at once to

MILAN R. BUMP, Editor,
60 Wall street, New York.

[OFFICIAL NOTICE.]

Change of Meeting Place, Michigan Gas Association.

MICHIGAN GAS ASSOCIATION,
OFFICE OF SECRETARY,
DETROIT, MICH., July 1, 1907.

To the Members, Michigan Gas Association: Owing to unavoidable delays in the completion of the new hotel at Kalamazoo, Mich., the Executive Committee has changed the place of meeting from Kalamazoo to Battle Creek, the meeting to be held September 18, 19 and 20, 1907. A notice will be sent in the near future giving full information in regard to hotels and programme, for papers as well as entertainment.

Respectfully,
ALONZO P. EWING, Secretary.

BRIEFLY TOLD.

TWO BOOKS AT HAND.—We are indebted to the courtesy of Mr. Walter King, the Nestor in gas journalism, whose editorial control and publishing direction have made the *Journal of Gas Lighting* famous the world over, for a copy of a handsome book, the matter between its covers being descriptive of the Granton Works of the Edinburgh and Leith Corporations' Gas Commissioners. The narrative, is by Mr. W. R. Herring, the learned engineer and accomplished gentleman under whose inspiration the work was planned and under whose direction the plant was assembled and completed. To say anything in assertion respecting Mr. Herring's ability in any direction would be altogether plus, wherefore we may truthfully say that as his work in Edinburgh was done so is his description thereof—full and well. The story is that of a great enterprise in construction, brought quite abreast of the best practice of the day in gas manufacture and distribution. It is told fluently and without ornation as to verbiage; and the text is so supplemented by illustrations that one does not need to be in the flesh in Edinburgh and Granton to comprehend perfectly that which has been done there. Mr. King, from the publisher's end, has left nothing undone that should have been done to make the book a necessity in the library of every gas man, be it abroad or here.

LIBRARY OF CONGRESS JUL 8 1907 SMITHSONIAN INSTITUTION

We are also indebted to Mr. King for a copy of a "History of the Introduction of Gas Lighting," which is from the pen of that well loved veteran in the gas industry, Mr. Charles Hunt, President of the Institution of Gas Engineers, and whose literary fame in the fraternity is closely linked by the fact that he compiled the third volume in the now world-famous series of Groves' and Thorpes' "Chemical Technology," which volume has to do with "Gas Lighting." Nothing save praise may be said of the current venture of Mr. Hunt in gaseous literature; for it is complete. Notable in the volume is a handsome photograph (as a frontispiece) of Mr. William Murdoch, a very striking thing about which is the remarkable facial resemblance that was between Mr. Murdock and President George Washington. Either volume may be obtained from Mr. King or from us.

CURRENT COMMENT.—

THE contract for the new storage holder for the Georgetown (D.C.) Gas Light Company, has been awarded to the Kerr Murray Company, of Fort Wayne, Ind. The holder is of the 3-lift order, and 93 feet 6 inches diameter.

MR. HAWLEY PETTIBONE, of New Rochelle, N. Y., has been appointed Chief Engineer and Purchasing Agent for the Waycross (Ga.) Gas and Electric Company.

MR. J. S. BRAGMIER, the Manager of the Oneida (N. Y.) Gas and Electric Company's salesroom, says that if sales of gas apparatus may be taken as an indication, the Oneida Company will double the present output in 2 years.

THE shareholders of the Milford (Mass.) Gas Light Company have finally been rewarded for their faith in the enterprise by the receipt of a substantial cash dividend.

MR. JOHN C. D. CLARK, resigned last Monday the post of Commercial Manager for the Laclede Gas Light Company, of St. Louis, Mo., in order to serve the Peoples Gas Light and Coke Company as its New Business Manager. Good men don't go begging when Chicago is after them.

THE following is the text of the new law of the State, regulating the supply of gas furnished to cities of the second class. The standards are: "* * * If a coal gas, 16 candles; if a mixed coal and water gas, 18 candles; and if a carburetted water gas, 20 candles. A candle shall mean a sperm candle, 6 to a pound, burning at a rate of 120 grains of spermaceti per hour. The test for illuminating power shall be made with gas obtained from a service pipe or main located at a distance of not less than 1 mile nor more than 1½ miles from any distributing holder, using, for coal gas and mixed coal and water gas containing more than 50 per centum of coal gas, an F argand burner, and for mixed coal and water gas containing 50 per centum and less of coal gas and for carburetted water gas, a number 7 slit union Bray burner, on a basis of consumption of 5 cubic feet of gas per hour. The minimum pressure of gas so furnished or supplied which shall be permitted in any service main in any such city shall be sufficient to balance a column of water 1½ inches in height. The maximum pressure therein allowed shall be an amount sufficient to balance a column of water 3¾ inches in height, plus an allowance at the rate of 1 inch for variation of each 100 feet of increase in altitude in the distributing system between the holder and the point of consumption, except that no maximum pressure shall be prescribed in service mains the pressure of gas from which is regulated by service governors, supplied and maintained without charge to consumers. A violation of any of the provisions of the act shall constitute a misdemeanor. The act is to take effect immediately."

THIS is from Pueblo, Col., under recent date: "A few evenings ago before the Progressive Council meeting, an organization of the employees of the Gas Company, 50 enthusiastic gas workers gathered at the Company's offices to take part in an interesting programme which they had prepared. After the regular business had been disposed of refreshments were served, which consisted of ice cream, cake and fruits. Gas ranges and furniture were then cleared from the salesroom and the balance of the evening was spent in a real, live Missouri hop. 'Petroleum' Lewis became so enthusiastic that he made a very long and weighty speech, in which he explained the difference between petroleum and gas. Mr. Cantril sat back and smiled his approval to see his boys and girls enjoying themselves to the tune of 'Waltz Me Around Again, Willie.'"

[PROCEEDINGS; FURNISHED BY THE SECRETARY.]

THIRD ANNUAL MEETING, IOWA DISTRICT GAS ASSOCIATION.

HELD AT CEDAR RAPIDS, IA., JUNE 12-13, 1907.

FIRST DAY—MORNING SESSION.

The third annual meeting of the Iowa District Gas Association was convened in the Montrose Hotel, Cedar Rapids, Ia., by the President, Mr. George McLean, at 10:30 A.M., June 12. The following members were in attendance:

Active.

Averill, A. T., Cedar Rapids, Ia.
Averill, G., Cedar Rapids, Ia.
Branson, D. C., Clear Lake, Ia.
Baker, J. C., Marengo, Ia.
Burt, A., Waterloo, Ia.
Chubb, C. N., Sioux Falls, S. D.
Clabaugh, G. W., Omaha, Neb.
Clary, E. D., Burlington, Ia.
Crawford, T., Clinton, Ia.
English, A. L., Council Bluffs, Ia.
Fair, C. W., Oskaloosa, Ia.
Forest, G. S., Iowa Falls, Ia.
Haines, J., Des Moines, Ia.
Hinds, O. H., Le Mars, Ia.
Kellogg, L. L., Sioux City, Ia.
Lawlor, W., Fremont, Neb.
Lawlor, R. H., Waterloo, Ia.
Lea, H. I., Chicago, Ills.
Maple, F., Boone, Ia.
Martin, E. H., Omaha, Neb.
McLean, G., Dubuque, Ia.
Mitchell, H. D., St. Charles, Mo.
Nash, H. A., Perry, Ia.
Pratt, E. G., Chicago, Ills.
Reuping, L. H., Sioux City, Ia.
Roper, G., Rockford, Ills.
Vincent, G. I., Des Moines, Ia.
Waring, G. H., Omaha, Neb.

Junior.

Asendorf, C., Chicago, Ills.
Bebb, J. F., Des Moines, Ia.
Grey, J. C., Des Moines, Ia.
Hutchinson, W. P., Marion, Ia.
Mead, J. J., Cedar Rapids, Ia.
Olds, H. L., Detroit, Mich.
Parker, J. F., Rockford, Ills.
Polk, R., St. Louis, Mo.
Potter, H. W., Burlington, Ia.
Schall, H. D., Detroit, Mich.
Stewart, J. K., Waterloo, Ia.
Suchomel, T., Cedar Rapids, Ia.
Wickham, L., St. Louis, Mo.

The Association also had for its guest Mr. Geo. F. Goodnow, of Waukegan, Ills.

WELCOMED TO THE CITY.

The President—Gentlemen, we are ready for business, and Mr. J. F. Rall, of the Cedar Rapids Commercial Club, is here to speak a few words of welcome to us. We will be glad to hear from him.

Mr. Rall—Mr. President and gentlemen: It gives me great pleasure to welcome you on behalf of the 300 members of the Cedar Rapids Commercial Club and the citizens of Cedar Rapids generally. I know your mission is one of enlightenment, for you are presumed to be engaged in spreading light in the dark places, and as you have probably not come here to listen to any lengthy address I think that is the reason I have been chosen to speak to you. Speaking is not my forte. However, the thought occurs to me that we here to-day represent the great central portion of the Mississippi Valley a country which a few years ago was known as the "Far West." Even to-day, by the provincial inhabitants of New York and Boston, we are still supposed to be "Out West;" but, as a matter of fact, if we draw a circle through Chicago, St. Paul, Minneapolis, Kansas City, Omaha, and St. Louis, Cedar Rapids will be the center of it. Again, if you draw a circle from the Atlantic Coast, on the east, to the Pacific Coast, on the west, from the northern fields of Canadian wheat, on the north, to the Gulf, on the south, you will find we are located in the geographical center of this continent. We, therefore, occupy a position in the heart of this country—a heart which has been sending out through the arteries of commerce its floods of grain and cattle that have been feeding the nations of the world. These have been the principal products of this territory, but not the only ones. We have not neglected education and progress along lines which produced the highest and best there are in mankind. We have during the last few years been taking a place of which we need not be ashamed in the halls of commerce, in the fields of finance. Our business has been growing. Our country, from being covered with mortgages held in the east, is fast assuming its position as one which is the reserve in the financial centers; and that is reasonably true, because we have produced the real wealth from this territory. We are already taking our stand in the place where we will surely succeed, and that is in the matter of manufactures. This territory which you gentlemen represent is bound to occupy a greater and greater field in the line of manufacture. We have here the workman living in his own home, surrounded by high-grade conditions—his food and his living are at his door, and, with employment in the way of manufacturing, he will soon have the luxuries as well as the necessities of life. This will open up to you, gentlemen, without any question, your best field, and

it is opening up to-day. Only a few years ago our artificial lights in the way of electricity and gas were considered luxuries. To-day they are necessities, and the workman's home will be the great field for future advance along all the lines of this kind of industrial progress. We are especially pleased to be able to welcome you to Cedar Rapids, a city in which we have special pride, and I believe we are rightly entitled to a small degree of it. We have here a city made by its citizens. Its best enterprises are owned, controlled and managed by its own citizens and financed by its own capital. In the line of manufacture, for instance, we have the honor and privilege of having produced, during the last year in which the United States Census Bureau made its investigation, the largest amount of manufactured products produced by any city in the State of Iowa. Of course, it is true that a large per cent. of this was cereals, although since that census was taken we have added another mill to the list that is almost as large as the first one. A man who was indulging in figures recently made an estimate that the twine which would be required to bind the grain which has gone through our mills and factories in 1 year would furnish a kite-string 3 times round the world. It takes a train a day to bring the grain to Cedar Rapids that goes through our mills. We have a city of homes, of schools, of parks, and we hope that during your stay here you may be able to enjoy some of our hospitality. I wish to especially extend to you all a cordial invitation to visit our Commercial Club Rooms, on the fourth floor of the Masonic Temple, corner of First avenue and First street. I am sorry to say our Secretary is out of the city at present, but our steward and lady-assistant will be glad to see that you are introduced to the members present. Our billiard tables, card tables, etc., will be open for your use, and we hope that your stay with us will be pleasant, that your meeting here will be profitable to you all, and that as you return to your various fields of occupation, your light may so shine that it will not flicker or grow dim.

President McLean's Reply.

The President – Mr. Rall, on behalf of the Association I wish to thank you heartily for the kind welcome you have so gracefully given us. It is a pleasure to meet in the city of Cedar Rapids, with whose reputation we are familiar. The gentlemen assembled here are engaged in a business of the highest usefulness to society. As you have just stated, they look for extension now largely in the homes of the workingmen and in giving their service to their families. We believe that the more our business is extended the better and happier homes we have, the better citizens we have and the better, cleaner communities we have. We meet here to try, by conference and discussion, to find means of making our utilities of even more service to these communities, and we are content if we can get for ourselves a modest share in the benefits derived from it. We are all glad to hold this meeting in the city of Cedar Rapids, to have the pleasure of visiting and seeing you. I assure you, if our wishes prevail, Cedar Rapids, the parlor city, will continue to experience peace, prosperity and progress. [Applause.] Gentlemen, the first thing on our order of business is the reading of minutes of previous meeting, but as these minutes have been published in the Gas Journals, if there is no desire to have them re-read at this meeting, it might be well enough if some one would make a motion to dispense with the reading. [So ordered.]

The Report of the Council

was read by Secretary Vincent, as follows:

The Council of the Iowa District Gas Association met at Des Moines, Ia., April 8, 1907. The meeting was called to order by Mr. Averill, Chairman. The following members were in attendance: Messrs. Averill, Waring, Kellogg, McLean, Burt, Zahm, Haines and Vincent. The first question for discussion was the place for the next meeting. The Secretary read extracts from the proceedings of the 1906 meeting, which expressed the sense of the Association that the next meeting should be held at Cedar Rapids, Ia. It was moved by Mr. Kellogg, seconded by Mr. Waring, that the 1907 meeting of the Association be held at Cedar Rapids, Ia., June 13th and 14th. [Carried.]

The Chair appointed the following Committees:

Arrangements.—G. M. Averill, Chairman; Geo. Roper, Jno. B. Mitchell.

Finance.—Geo. H. Waring, Chairman; Geo. S. Carson, A. W. Zahm.

Moved by Mr. Haines, seconded by Mr. Kellogg, that the Council recommend to the Association the appropriation of $25 to the Trustees of the Gas Educational Fund. [Carried.]

Decided, that Active Members who move out of the three districts under the jurisdiction of the Association should not be expected to resign.

Decided, that those men who applied for Charter Membership in the Association, but who did not attend the meeting through failure to notify, should not be expected to pay back dues to retain their Charter Membership.

The following papers were assigned:

"Experiences in Operating Water Gas Machines," by Mr. L. H. Reuping, Sioux City, Ia.

"Attitude of Gas Companies Toward the Public," by Mr. Jansen Haines, Des Moines, Ia.

"The Organization of Gas Companies in Towns of Less Than Ten Thousand Inhabitants," by Mr. Geo. Waring, Omaha, Neb.

"High Pressure Transmission," by Mr. L. H. Lawlor, Waterloo, Ia.

"Arc Lamp Maintenance, Methods and Results, by Mr. J. C. Grey, Des Moines, Ia.

"New Business," by Mr. A. W. Zahm, Mason City, Ia.

"Accidents and Damages," by Mr. G. M. Averill, Cedar Rapids, Ia.

"Standard Methods in Service, Meter and Appliance Fittings;" Short Topic, by Mr. G. I. Vincent, Des Moines, Ia.

It was decided to announce to the members a number of short topics as follows:

"Removal and Disposal of Tar."

"Purification."

"Prepaid Meters."

"Removing Meters *versus* Shutting Off Gas, with or without Lock Cocks."

"Minimum Charges."

Council Meeting.

The second meeting of the Council was held at Cedar Rapids, June 12th, 1907. The following were in attendance: Messrs. Averill, Waring, McLean, Clary, Burt and Vincent.

The following applications for membership were approved:

Active.

J. C. Baker, President, Marengo Gas Company, Marengo, Ia.

A. W. Borden, Manager, Hastings Light and Heat Company, Hastings, Neb.

C. Campbell, Sec. and Treas., Huron Light and Power Company, Huron, S. D.

T. Crawford. Gen. Manager, Clinton Gas Light and Coke Company, Clinton, Ia.

A. L. English, Manager, Citizens Gas and Electric Company, Council Bluffs, Ia.

C. W. Fair, Manager, Oskaloosa Light and Fuel Company, Oskaloosa, Ia.

O. H. Hinds, Asst. Manager, Le Mars Gas Company, Le Mars, Ia.

C. R. Hensinger, Manager, Grand Island Gas Company, Grand Island, Neb.

H. Honeywell, Gen. Manager, Lincoln Gas and Electric Company, Lincoln, Neb.

O. Houck, Supt., Dell Rapids Gas Company, Dell Rapids, S. D.

H. I. Lea, Con. Gas Engineer, 616 The Rookery, Chicago, Ills.

R. H. Lawlor, Supt. Gas Department, Citizens Gas and Electric Company, Waterloo, Ia.

W. Lawlor, Mgr., Fremont Gas and Electric Company, Fremont, Neb.

H. A. Nash, Manager. Perry Gas Company, Perry, Ia.

G. W. Olney, Asst. Secy., Aberdeen Gas Company, Aberdeen, S. D.

J. F. Porter, President, Peoples Light Company, Davenport, Ia.

R. Ritchie, Manager, Nebraska Lighting Company, Plattsmouth, Neb.

L. H. Reuping, Engineer, Sioux City Gas and Electric Company, Sioux City, Ia.

Junior.

J. F. Bebb, Salesman, G. M. Clark, Des Moines, Ia.

W. P. Hutchinson, Salesman, Sprague Meter Company, Marion, Ia.

G. F. Lamb, Fireman, Gas Maker, Fitter, Le Mars Gas Company, Le Mars, Ia.

E. H. Martin, Comm'l Agt., Omaha Gas Company, Omaha, Neb.

J. J. Mead, Shop Foreman, Cedar Rapids Gas Light Company, Cedar Rapids, Ia.

H. W. Potter, Cashier and Chief Clerk, Burlington Gas Company, Burlington, Ia.

J. F. Parker, Salesman, Eclipse Gas Stove Company, Rockford, Ills.

R. W. Polk, Engineer, Laclede Firebrick Company, St. Louis, Mo.

J. K. Stewart, New Business Mgr., Citizens Gas and Electric Company, Waterloo, Ia.

T. Suchomel, Works Foreman, Cedar Rapids Gas Light Company, Cedar Rapids, Ia.

H. D. Schall, Salesman, Detroit Stove Works, Detroit, Mich.

L. Wickham, Parker-Russell Mining and Mfg. Co., St. Louis, Mo.

Election of New Members.

Mr. Haines moved the adoption of the report, also that the Secretary

be instructed to cast a ballot for the election of candidates for membership.

The President—Gentlemen, a motion is pending to adopt the report of the Council, including election of candidates for Active and Junior Membership, respectively, whose names have been annunced. All in favor of adoption of the report will please say "Aye." Contrary, "No." The report is adopted. The Secretary will so cast the ballot. Gentlemen, the report of the Council contains a recommendation that the sum of $25 be appropriated to the fund of the Trustees of the American Gas Light Association Educational Fund. What is your pleasure in regard to this recommendation?

Mr. Haines—I made that recommendation in the Council, because at that time, and even now, I think our treasury is able to stand it. I think the whole idea, also desire of this Association is educational in its methods and in its objects. I don't believe there is any place where the money can be better spent than in the Educational Fund of the American Gas Institute. While the contribution is a modest one, so far as they are concerned, it is quite a good sized one so far as we are concerned; and as long as we are able to stand it, and it is a good object, I think its should be done. I move that the appropriation be made. [Seconded by Mr. Averill and carried.]

Report of Secretary and Treasurer.

The President—Next will be the report of the Secretary and Treasurer.

The Secretary thereupon presented his reports, as follows:

Receipts.

Balance on hand		$38.08
1906 dues and membership fees		126.00
Receipts for banquet		60.00
1907 dues and membership fees		39.00
Total receipts		$269 08

Expenditures.

Stenographer, 1906 meeting		$38.10
Banquet, 1906, Savery Hotel	$56.40	
Julius Baur	3.50	
		59.90
Printing, 1906 meeting		20.25
Typewriting		6.40
Letter book		1.45
Stationery, Kenyon Printing Co	$5.25	
" " "	9.75	
		15.00
Postage and telegrams		7.02
Expense, 1907 Council meeting		3.60
		$151.72
Cash as per check book		117.36
		$269.08

During the past year the principal work of the Secretary has been an effort to interest at least one representative of every gas company in the three States. Besides the circular letters a number of personal letters were written. The result of the work with reference to new members has already been given in the report of the Council. Also, it is believed that the interest of the gas fraternity in the Association has been materially increased.

The proceedings of the 1906 meeting were compiled and published in the American Gas Light Journal and "Progressive Age."

The Secretary, on behalf of the Council, sent letters to the officers and various Gas Associations inviting them and the members of the Associations to be present at this meeting. The acknowledgments are attached to this report. G. I. Vincent, Sec. and Treas.

The Secretary, also upon request of the President, read all of the letters of greeting and regret from officers of other Associations.

The President—Gentlemen, we wish to announce the banquet will be held at this hotel to-morrow night at 8 o'clock. Tickets can be obtained from Mr. Averill, Chairman Committee on Arrangements, at $2 each. I think it might be well for those contemplating attending the banquet to see Mr. Averill at the end of this session. Also, some announcement regarding dues is "due" here. It is desirable that the members pay their dues at the end of this session. Some of us forgot it last year, particularly those who did not happen to attend the meeting. A considerable amount is due, and we desire to have it settled as early as possible. I will appoint as a Nominating Committee Messrs. Kellogg, Averill and Roper. The next in order is the address of the President.

Vice-President Haines assumed the Chair and the President read his

INAUGURAL ADDRESS.

[For the text of Pres. McLean's address, see Journal, June 24, p. 1058.]

Committee on President's Address.

The Chairman appointed as Committee on President's Address, Col. E. G. Pratt and Mr. A. T. Averill.

[President McLean in the Chair.]

The President—We will now have the report of the Finance Committee, of which Mr. Waring is Chairman.

Mr. Waring—In auditing the Treasurer's Report, we checked the bankbook, checkbook, membership book and cashbook, and find the report as read by the Treasurer to be correct.

Place of Next Meeting.

The President—Gentlemen, it is now in order to consider the place of the next meeting. I believe the Council would like to have the preferences of the members indicated, in so far as they are ready to indicate them at this time.

Mr. Roper—I think it would be in order to move the acceptance of the report of the Finance Committee. [Carried.]

Mr. Kellogg—If the Council wants an expression as to what we think about the place of meeting, I would like to suggest Omaha, provided Omaha wants it.

The President—Omaha has already shown a very hospitable attitude toward the Association.

Mr. Clabaugh—Just one word for Omaha. She wants anything on earth she can get that will benefit her, and we feel sure that the meeting of this Association will be of very vast good and benefit to Omaha. I further say in this connection that we extend a most hearty invitation to the Association to meet at Omaha next year, whenever the time may be, and would suggest, if it is proper, that the meeting be about this time of the year, when our Ak-Sar-Ben is in full blast. Some members are here whom I would like to see in the Ak-Sar-Ben. I am sure that they would have an awfully good time, and I know we would.

Mr. English—I live across the river, and if Omaha can't do you up, come over to Council Bluffs.

Mr. Averill moved that the next meeting be held in Omaha, in the month of May instead of June. [Seconded.]

Mr. Clabaugh—The great attraction in Omaha at this time of the year is our Ak-Sar-Ben. We are very proud of it. It is our 13th year out there, and we are not at all superstitious; in fact, 13 is a very lucky number for us. I feel sure that the attraction of the Ak-Sar-Ben alone would pay the Association to put off the meeting until June. June as a rule is a very pleasant month in Omaha, and all of the attractions will be open at that time. We can entertain you very much better in June than in May, although we will be glad to see you any month in the year.

Mr. Averill—We are pretty busy in June—more so than in May; but I have no objection to June if you think it would be a pleasanter month.

The President—You have heard the motion, gentlemen. All in favor of the adoption of the motion will please say "Aye." Contrary, "No." It seems to be unanimously carried. The matter of printing the proceedings of our Association will now come up for consideration. Perhaps some who have given consideration to the matter will tell us about it. Mr. Burt, have you a suggestion to offer?

Mr. Burt—in order to bring the matter before the Association, I move that the papers be printed this year.

Mr. Haines—I would like to second that motion, if Mr. Burt will allow me to amend it in this way. I think if we are going to have the papers printed it will be well to have the proceedings for 3 years printed, the Constitution included, because I doubt if the expense would be very much greater than printing the papers for this meeting. We can hardly afford to print the proceedings every year, but we can afford to print them 3 consecutive years. I would like in seconding that motion to have it discussed in the meeting, for it is only my idea.

Mr. Burt—I accept that amendment.

The Secretary—The subject came up at the Council meeting as to the question of publishing the Constitution, which would make a very small pamphlet, and the expense of distribution to the members would be very light. I took up the question of publication of proceedings in book form, and find that the expense will be absolutely prohibitive for the Association at present, even to print 3 years' papers at one time. With the outstanding dues all collected we would not have more than half enough, and as some of the larger associations do not publish their proceedings, even after they have been organized for a number of years, I feel we are perfectly justified in accepting the courtesy of the Gas Journals for some time. As Mr. Haines says, it costs practically little more to print 5 years than 1, 2 or 3 years. From present

indications our funds will accumulate fairly rapid, so that after the fifth year we will have enough to publish the first 5 years' papers. The publishing of the Constitution in a little pamphlet would be a very light expense and a very admirable thing to do.

Mr. Burt—Everything the Secretary says is true, but at the same time there is the feature in publishing the proceedings that it will assist in getting a larger number in the Association, and with proper solicitation on the part of the manufacturers I believe the cost can be taken care of by advertising to a very large extent, and for that reason it seems to me would be advisable to place these papers in the hands of the gas companies of Iowa, Nebraska and South Dakota.

Mr. Roper—In regard to publishing the proceedings, that was so thoroughly discussed in the first meeting of the Institute, and I was so thoroughly disliked for what I said there that I don't dare to say it again; but I would make a motion that that be referred to a committee to be appointed by the Chair. [Seconded.]

Mr. Waring—Are they to have authority to act and have the proceedings printed?

Mr. Roper—Yes; I would say that the Committee have authority to act—to print or not to print.

The Secretary—Will the Committee have authority to draw on the Treasurer for funds in the matter? [Laughter.]

The President—They can draw, but the Treasurer knows what he can do, too.

Mr. Haines—I would like to amend Mr. Roper's motion and simply say that that Committee be instructed to report back to the next meeting of the Iowa District Gas Association what progress they have made in regard to it. [Laughter.]

Mr. Roper—I accept the amendment.

The President—The question before the house is on Mr. Roper's motion to refer the matter of publishing the proceedings to a committee with power, and there is an amendment that the committee report at our next annual meeting. The vote will be first taken on the amendment. All in favor of the amendment will say "Aye." Contrary, "No." It is carried. All in favor of the motion to refer as amended will please say "Aye." Contrary, "No." The motion is carried. The committee will be appointed later. Gentlemen, we will listen to the paper by Mr. Haines, on

DISCUSSION OF THE ATTITUDE OF GAS COMPANIES TOWARD THE PUBLIC.

[For the text of the paper by Mr. Haines, see JOURNAL, July 1, p. 5.]

Discussion.

Mr. Clabaugh—I heartily agree with Mr. Haines in all he said in his paper. As to the policy of a gas company toward the public in its dealings with them and giving them the best it knows how, there is no question about that, for it is the proper way to do with every business; the gas business is no different from any other. Take a dry-goods store. Can a man sell inferior articles and expect to hold his trade? He can't be making new trade all of the time. The gas company differs somewhat from that, because its business is entirely local. Many gas companies think that if they lose a consumer and get a new one they have established equality. They have not. I would 100 per cent. rather retain the old customer and the prospective one before me at all times than to lose that fellow; and I believe we should do everything in our power to conciliate and make our patrons friends and good customers, and in fact, solicitors, which they will be if they are friendly in their attitude toward the company. We all have our troubles in the gas business, as everybody else has in every other kind of business, but I do not believe in going to the extremes some of the companies have throughout the country in the last few years. In order to obtain business they have spent $10 to get $1 worth of business. No fair business man will expect that to begin with, and it is not good business to do so. I believe in selling goods at as low a price as can consistently be done. Mr. Haines brought out a point there that I think is most necessary to the advancement of the gas business, which is that every clerk should be instructed (and not only instructed, but should carry out his instructions) to so deal with the public that they can have no reason to find any fault with the gas company. I think most of the gas companies have recognized this fact. It is true we have cranks occasionally, but we must get rid of them. No matter how good they are, if they antagonize our customers they are expensive propositions to us. I believe, too, that in the gas office every man should work with every other man, and he will necessarily work with the public, because a man who cannot work with a clerk standing by his side, or who is not willing to help out his fellow employee, will not do anything towards conciliating the public. Years ago in Omaha a gentleman introduced me to two of our prominent men whom I only knew by sight, and they started in with a complaint. I listened to them very carefully and had a very delightful talk with them. Their gas bills were too large; they had never burned it—the old, old story; but before they went out I sold each of them a water heater, and they asked me out to take a drink. I feel in my dealings with the public it is my duty and my right to treat our customers as well as I know how. I expect the same thing of every employee, and if I don't get it we have trouble. I have talked too much already, but I do want to say that every man in the office, from the manager down, must not forget himself, and remember that he is the gas company whom the customer is condemning, but is only a very small part of it, and if he forgets his personality he will not have any trouble with his customers.

Mr. Burt—We have all heard the statement that we should go to almost any limit in conciliating the public. One problem in treatment of the public which I would like to have the advice of the members present is in treating with delinquents who fail to pay up by the 20th of the month. Shall we remove their meters in order to compel payment of the bill? That is one place where it requires perhaps more patience and judgment and ability in treating with the public than any other place of which I know.

The President Mr. Kellogg, who has been through several very arduous campaigns, I think has ideas on the public policy that will interest us.

Mr. Kellogg—I don't know that I can say anything that will be of interest in answer to Mr. Burt's question. It is a pretty hard one, and I think he answered it himself by saying it depends on the temper of the customer, on his financial ability, his disposition and a lot of other things. The question of getting along with the public is one we have all been studying for a long time, and about the time some of us thought we made a great success of it, the public jumped onto us with both feet. You can't tell just when you are making a success, but the best you can do is to try. Some time ago we took out a new franchise, which is in effect now. During the passing of the ordinance we had to have it voted on by the public, and there was one instance which was quite interesting. We had just one voting precinct in the city that we did not reach with either gas or electricity. Of course, we did not pay any attention to that precinct, supposing, of course, that they would have no interest, as we hadn't offended them. The ordinance carried about 5 to 1, but in this precinct where we had no business at all there were 47 out of 48 votes against us.

Mr. Pratt—Mr. Haines's paper certainly furnishes excellent foundation for discussion—not that it contains anything that would induce one to take a material issue with it. I have been a great believer in taking the people into my confidence and going as far as I believed it was possible or necessary in order to keep them reasonably advised as to the kind of business we were carrying on and the methods pursued by us in order to furnish them good and satisfactory service. Many things complained of are due possibly more to the ignorance of the public than to anything else. People believe that because gas can be sold for 80 cents in New York or in Chicago, it can be so sold anywhere. Many residents of Iowa cities believe, because coal is mined in Iowa and gas is made from coal, hence Iowa coal can be used for that purpose. Such arguments can usually be met by explanation, and the public when satisfactorily and suitably informed upon such subjects are easily made to believe they are in error in regard to their prognostications or feelings respecting costs or prices. Many times gas companies are afflicted by these attacks because of something reflected from some other corporation. The gas company is coupled with treatment that may have been extended to the public by some other corporation, and frequently it suffers by reason of that reflection. As far as regulation is concerned, if it were possible to have honest regulation by men willing to inform themselves regarding the business, I don't believe that gas companies have very much to fear from it. I think it is only a question of time when gas and electric companies, and all public service corporations, will come to that idea of regulation, and I think it behooves those of us interested in these businesses not to fight that sort of regulation too hard. It often appears to me that when we enter into the spirit of such things in the right way we are more apt to receive fairer and honester treatment than if we object to everything of that kind that is brought forward. Mr. Clabaugh's reference to the treatment of the public by the employees of the company I think is very pat. All of us have probably had the experience that even though we as managers or officers of companies have tried our best to secure the confidence of the public

and to instruct our subordinates in their methods of treating the public, yet some individual has assumed more authority than he had any right to assume, and created a disturbance that took months, possibly years, to eradicate, simply because the public looks upon any employee of a public service corporation as an agent of that company. If he can't understand that he is an agent of the company and must extend to the public the same treatment the manager does, the sooner he is disposed of the better. I think it goes without saying that any public service corporation is expected to render to its patrons the very best service possible. I think the public can be made to understand that they are receiving good service and getting it at a fair price. As far as Mr. Clabaugh's third remark (increasing or extending the business) is concerned, I believe we have gone through the period when it was necessary to furnish an inducement for business. I don't believe Mr. Clabaugh will deny the fact that the present condition of our business, as far as selling large volumes of our product is concerned, is due almost entirely to the liberality that the gas companies have extended to the public in years gone by. I believe if we had continued the old policy of charging long prices for service pipe, a profit upon stoves and fixtures, or anything else we might have to sell, for the placing of burners and that sort of thing, the business would not be where it is at the present day. We have gone through a sort of a promotion period, when it was necessary to educate people to the use of more gas, and I think now that we have reached a time when whatever we do should be done at some profit. Our business is that of selling gas. If we can place the facilities for using gas before the public at a reasonable figure, and not at a loss, I think it clearly behooves us to do so, but I believe that for everything the gas company does it should receive a price that will cover at least the cost of that work. For instance, in my own experience at Milwaukee, I was satisfied when I went there that the lighting conditions could be very much improved, but when it came to a canvass of that city to discover how much the consumer was going to do, I discovered that of his own accord he was willing to do very little. We started in a way by inspecting burners of all kinds. Keeping at it continually, sending out invitations for complaints and noting and remedying them, we soon discovered a large list of consumers upon our maintenance list, and after 2 years of that sort of work we had something like 30 men on our maintenance work alone. That work was self maintaining. I also inaugurated there an appliance department along the same line. While much of this work has been done for nothing, I think we can handle it in a way that will pay for itself.

Mr. Kellogg – We all make a mistake in assuming that the public is antagonistic. My experience is that a very small percentage of the people, and they appear to be the same ones all the time, are so mannered. You will find that the man who comes around this January and makes a roar about his big December gas bill, was around last December and the December before, if you look the matter up, and you will find that when there is an agitation started it is the same people who are promoters and boosters; but the sum total is a very small percentage. I don't believe 5 per cent. of the people, on an average, are grumblers. Some of them will probably always be with you, and you think they are many, but when you come to analyze it, I don't think it amounts to much.

Mr. Clabaugh - Mr. Kellogg says if he finds a man who in January complains of his December bill, he looks back and finds that man was there last year, also the year before. That doesn't look right. I think he ought to have been conciliated the year before. I think he is absolutely right in saying that a very small percentage of the people make complaints. That is true, but it doesn't necessarily follow they are the only ones who do the thinking. We unfortunately have a very small office, and on the last day for discount it is so crowded that you can scarcely get in or out. Necessarily those who come in to pay their bills come in contact with those who make their complaints. They come in there with a grievance, or an imaginary one, but when they find a line there of 3 or 4 people they get in line and add to it. The complaints have come on the last day of grace, or any time within a week or 10 days after the reading has been left at their homes. I don't think we need worry very much about it. We want to do the best we can for them, but they are doing it merely to gain time; there is no question about that. In answer to Mr. Pratt I want to say that, in 1892 I think, I was the first man to advocate free service. I had been but 2 years in the gas business, but I had put it on the same footing as anything else, and felt it was not good policy and that we had no right to charge for meter service and connections. Mr. Alten S. Miller, now of Baltimore, stood up with me, but everybody else was against us. Within a year a number of companies had free services. I think it was one of the best things we have had. At the same time I advocated a solicitor, and "Dick." Young, of Passaic, N. J., now of Newark, I think, was the first solicitor. So I agree with Mr. Pratt thoroughly as far as service is concerned, and think too we are benefitting now from the work done years ago; but even then we went to a great many lengths that we should not.

Mr. Haines - In regard to Mr. Clabaugh's remarks on regulation of gas companies, I would say I attempted to bring out in my paper that if the gas company's attitude toward the public was proper, that regulation would be along business lines; but if they were not proper that regulation would take a retaliatory attitude, to get even with the gas company, and that would place them on the defensive. If the gas company's attitude is proper it should not necessarily be on the defensive more than half the time. In regard to retaining old consumers, I think there is no question but that they should and would be retained if the attitude of the gas company were properly demonstrated toward them. As to conciliation, I don't like the word; I think it is not what Mr. Clabaughre ally meant. Conciliation to me implies compromise. I think you want not so much to conciliate a customer as to satisfy him. You want him to understand your position is a fair one, and you should explain it to him with sufficient patience so that in the end he will be satisfied that you are correct. If you are not correct, if there is a mistake on your side, of course it should be adjusted with the consumer on the basis of fairness to both parties. Regarding what Mr. Burt says as to removing meters after the discount day, I think the practice of allowing a customer to discount his bill if paid before a certain day establishes the answer to that. If the other customers don't pay, for no reason, until after the discount day, there is an injustice to the consumers who do pay before the discount day. Of course there may be an exception. A man may be out of town, or something of that kind, when it is reasonable that he can't pay; but I think that rule should be strictly lived up to where there is a discount day, and that perhaps where the discount day is earlier in the month it is easier for it to be lived up to. Of course that is only an opinion; it will differ very largely under different conditions. As to Mr. Kellogg's remarks, I think he answered himself in regard to the treatment of the public, and that it is very obvious from what he has stated, in regard to that one precinct where the votes were against him because the people were unacquainted with the management of the gas company, whereas in all of the other precincts they were in favor because they were acquainted. I think that is one of the most remarkable instances of the attitude of the public to a gas company that I know of. As to trying to meet the public half-way on any proposition and feeling that you are secure if you have their confidence in every respect, and then being disappointed later on, of course the answer is, how much worse off you would be if you had not their respect and confidence in the first place. You probably wouldn't be anywhere. In regard to the cashier's desk and the complaint desk being near together, I would suggest that the best method of disposing of that would be to permit the consumers to pay elsewhere—in the drug stores or other places where they would not be in contact with the complaint counter. I don't like the word "complaint." I think the gas company should abolish the word "complaint" and have the "order" and not the "complaint" counter. The complaint counter suggests a complaint that can't be adjusted, while the order counter suggests something that the consumer wants adjusted and leaves his order to have adjusted, whether it is an inconvenience to him in the nature of a complaint or not. In conclusion I would like to ask Mr. Clabaugh what he did when his customer asked him to go out and have a drink? [Laughter.]

Mr. Clabaugh—In regard to that I will say that I was never known to refuse anything that was not likely to explode. We have no complaint counter; they are all sent back to the bookkeeper. Mr. Haines thinks he could get rid of a great many of these "kickers" by having them pay elsewhere, and I know a great many companies that are so doing, probably with success. I violently oppose it. We have our office in which we show our appliances for using gas, and we want to get our customers in there to see them. They never can see them when they pay at the drug stores. If I could have an office so attractive that people would say, "I will meet you at the gas office," and everybody would come there, I think that it would be greatly to the benefit of our business.

Mr. Roper – There was a Wrinkle, either in the Western Association or the Institute, on the word "Complaint," furnished by John Clark, of St. Louis. He has a sign up, "Information and Requests." That was discussed at that time. I move that a vote of thanks be given to Mr. Haines for his very valuable paper. I think that Mr. Haines may

consider that he has the thanks of all of the members for his very interesting paper, and also for the enlightening discussion we have had.

The President—Gentlemen, the next session of this convention is appointed for 1 o'clock this afternoon. We are to have then a 2 hours' session, after which we are to have, by the courtesy of the Cedar Rapids Gas Light Company, an automobile ride. A motion to adjourn will now be in order, but when we do adjourn I trust that the members can reassemble promptly for the hearing of some papers we are to have this afternoon before we take the tour. [Adjourned.]

FIRST DAY—AFTERNOON SESSION.

The President—We will have the paper by Mr. Geo. H. Waring on

THE ORGANIZATION OF GAS COMPANIES IN TOWNS OF LESS THAN TEN THOUSAND INHABITANTS.

[For the text of the paper by Mr. Waring, see JOURNAL, July 1, p. 7.]

Discussion.

The President—Mr. Waring's paper indicates quite fully the qualifications necessary to make a success of a gas plant in a small town. I think perhaps he omitted only to state just where you are going to find the man. I don't know how many of our members come from towns of the kind Mr. Waring had under consideration, but many of them have ideas as to how they would combine the duties of gas works employees in one man in a small town. I don't know how large a town Mr. Olds is operating in, but he might be able to give us some information as to the practical workings of a small gas plant.

Mr. Olds—I certainly am very much interested in this paper, particularly that part relating to the qualifications of a gas manager in a small town. Our town is somewhat larger than the one Mr. Waring discussed, still I fully appreciate the difficulties of a manager in a small city. Among these is the fact of always having to meet interest on bonds. The man in a smaller town doesn't always have this to solve, but when he does have to check out this interest he finds his bank account very much overdrawn. I have had some experience in this line, and sometimes I wish the 6 months wouldn't roll around as rapidly as it does. On the other hand, the manager in the small place comes in contact with the city councils, which also is a thing that is sometimes unpleasant. Referring to the discussion of how to handle the public, I thought I had the public at my fingers' ends at one time, but they sprung an ordinance on me for dollar gas, and passed it all in one night. However, the manager in a small town certainly has a good schooling, and if he makes a success in such a town there is hardly any plant too large for him to handle.

Mr. Averill—I have been through the mill in a small gas plant; in fact, was forced into it. I bought the Cedar Rapids plant a good many years ago, when the town was small. The plant had been built just about a year, and, as I remember, there were some 200 meters. The parties that built the plant didn't know anything about its management. I bought a half interest in it, and afterwards learned that the promoters never expected to get anything out of the other half; that was the reason they traded with me. We had $25,000 of 10 per cent. bonds, and at the end of the first year we were short on interest. Well, we made it up in some way and hired a new manager, but at the end of the second year we were in the same fix. I owned a third interest in the plant, and at the second year period I said to one of the others that I wanted to sell or buy control. He said he didn't know anything about the gas business and would be very glad to sell out. I told him at the time my reasons for wanting that, in case I purchased the controlling interest, I would give our man 60 days' notice, and I was going there to run that plant so that it would make a profit or else blow it in the river. Well, after I bought him out I proceeded to give the man due notice. I went in there to see what was wrong and why we weren't making any money. By close watching I got on to the manufacturing part of it and increased the sales a little, so that at the end of 6 months I had made quite a little showing for the better. As I remember, I had a day man and a night man, and one man in the office who read the meters and made collections. After I ran it for a year it began to pay a little better; in fact, so well that I was interested in buying more stock. I practically bought out all of the stockholders save one, and gave the business my personal attention, as I remember now, for 3 years—I didn't happen to be in any other active line of business at that time. It certainly requires a great deal more attention and more figuring to run a small gas plant than a large one, and there is a good deal more work. When you get large enough so you can have a foreman for each department things run along comparatively easy; but in those days you know we had to educate the people up to the burning of gas, and it is an entirely different proposition to-day from what it was 30 or 35 years ago. Now the people are educated, as a rule, to the use of gas stoves. In the little town of Marion, which has about 4,000 people, we have been operating since about the 1st of August, and we now have 360 to 370 patrons there, besides some along the line between the two cities.

The President Mr. English, have you ever had any experience in towns as small as those we have been considering?

Mr. English—I have had experience in electric light plants in small places, where we had to do everything, but the company I am with now is the first with a gas plant that I have been interested in. While our company is not as large as some, we are growing nicely and haven't had very much trouble. We had a little difficulty at first with small mains, but that has been removed and we are working along very smoothly.

Mr. Kellogg—I am very glad Mr. Waring has given us this paper. I judge from his statements that he has had some experience, and I happen to know otherwise that he has. A paper of this kind should be of interest to quite a number of companies in Iowa, in which State many small companies are doing business. I think perhaps he has selected the very small ones possibly a little smaller than most of them; but that is all the better. I have had some experience in operating very small plants and in trying to get people to run them, and I know it is a very difficult proposition. From my observation the trouble in a small plant usually comes from two sources: Either it is not properly managed, or the manager is not furnished with the necessary funds to keep up his plant and give efficient service. It is pretty hard to get a man for $75 a month to keep books and superintend the entire ramifications of a gas plant, for there are just about as many in a small plant as in a large one; however such men can be found and educated.

Mr. Haines I have had quite an experience in running small plants for a short time. I think Mr. Waring brings out in one thought that to which we all should give a good deal of attention. If we can get a man who is ambitious to make a success of a small company in its every feature, and will take care to study the business, he has not only opportunity to learn from observation, but he will have the opportunity to draw from the experience of other people on the technical part of the business the mechanical operation. There is an excellent opportunity for a young man of good habits and ambition in such a position. As Mr. Waring said, it is not essential for him at starting to know very much about the gas manufacturing end, providing he starts on a reasonably well equipped small plant. I think a great deal of the difficulty in the smaller plants comes from the fact that they are promoted by irresponsible men who, presenting an alluring array of figures to a man who has a little money to invest, takes their word and invests it in a plant that in itself is incompetent to properly manufacture the product. The result is, after his plant has been in operation a short time he is more at sea than any one else in the business. The promoter leaves him with a plant on his hands. He can't get hold of the promoter because he is irresponsible and can't be recalled, and he is depending on the young fellow who is only partially trained; then his troubles begin. If he were to go to some larger company and ask them for a young man to manage the plant, the man would want more salary than he could afford to pay. If he employs an expert to run his plant, the expert will want more money than the plant will stand. If he employs a man temporarily to run it, it means a large investment, which should probably be charged to capital account, because it is starting his plant as a going concern. But if he takes the first bright young fellow he can get hold of and goes to the nearest town that has a gas plant in successful operation and lets him get more or less of an idea of the business, and puts him into his plant with the idea that there is success in it for the young man as well as the company, I think he ought to succeed. It is largely a question of judgment on his part as to the man he employs.

The President Mr. Baker, you are operating a plant in a small town are you not?

Mr. Baker I have been trying to for 3 years or more, and the longer we are at it the less we know. The great trouble with us is that we can't get the directors interested; another thing is we have been changing men too often. I came over rather to hear than to be heard, and I would like to hear from older men. I am afraid my experience would be bad.

The President—We would like very much to have remarks from any who have had experience in running plants in small towns. Perhaps a large number of the members are having proposals for gas

plants in towns that have 10,000 population and less. No doubt many of them are puzzled to devise a plan of operating plants in such small communities at a profit.

Mr. Kellogg - I think during the past year I have had applications for a dozen competent men out of my force to run a small gas plant, and I have not been able to fill a single one, because a department man is not fit to run a small gas plant; he doesn't know anything about it. He has been connected with a larger plant where they have lots of help, and can do things that can't be done in a small plant.

Mr. Lawlor - As to this practical man who wants to learn the gas business. I had a job at one time in a small water gas plant that was supplying 350 meters. One day we would operate and the next day the man would be reading meters and setting stoves. I will say that there is a good 18 hours' per day work for one man to run a plant of that kind, and it would be hard to get anybody to stick to such a place. They want the experience, but they don't want it that bad.

Mr. Haines—I would like to ask Mr. Lawlor if he knows of any successful business man in this country who hasn't had to work 18 hours to make a success.

Mr. Lawlor - In a small plant of the kind of which I speak, and with practically no future, a man has to work there 18 hours a day, for only $50 a month. I was out for experience.

Mr. Burt—I think everything depends on the young man who takes up this work, and I believe that it will be found that the University graduate is the man who will lend himself more readily to this class of service than almost any other person. In the first place, he has the technical training; he has the ambition to be something more than he would be in a small plant; and he has also, if he is the right sort of a fellow, the feeling that it is not the money he is getting for the 18 hours' work that he puts in that is paying him for that service. It is the experience, the formation of his judgment, and the placing him in a position to occupy a better position later on. I believe there are many young men who would take up this class of service. The experience one gets in a small plant of this character I think exceeds that which he gets in a larger plant, where he is confined to a particular department. When I first went into the gas business, with the Company in Cedar Falls, if I had known what I do to-day I would have bought the stock of the directors of that concern. I could have bought it for one-third what they put into it, simply because they were so disgusted with the business that they would almost have given it to me, had I taken it. At that time I didn't know enough to do so. I took hold of the plant, and as I say, worked 18 hours a day and did everything. I not only took hold myself, but my wife also helped make out the bills and sometimes read the meters. I simply tell you this to show a few things that a fellow gets when he runs a small plant. I know the difficulty of getting some of the conveniences for doing work. For instance, an adding machine is out of the question for a small plant, but you will find it true that almost every town has a bank that has one, and if you get on the right side of the cashier you can get the use of it without any cost. I had it for 2 years at Cedar Falls, the bank having the deposits of the Company.

Mr. Waring—I would like to reply to what Mr. Olds says about meeting interest on bonds every 6 months. As stated in the paper, in the plant in which I am interested we set aside this interest monthly, so that when the 6 months comes around we have the interest money in hand. If we didn't do that we wouldn't have it. A man thus operating is not deceived by his profits. In making out his statement he deducts interest each month, but doesn't count that as management. The rest is net earnings on the stock. So if we can't meet it the first month, we get busy right away before the half is up, and don't let this thing accumulate. As to finding a young man for this position, I don't exactly agree with Mr. Burt on the university graduate, for the latter is inclined to overestimate himself. When I graduated my brother wanted to know how much salary I thought I was worth, and if I thought I could get a position at $75. I said I wouldn't think of accepting a salary of $75 after spending 4 years in college, but he thought I would be lucky if I got even that sum. After I went around looking for work awhile, I was glad to get a position in a chemical laboratory to work as an assistant chemist for nothing. I only judge the university graduate by myself. I think the college professor is apt to instill into the mind of the young man the impression that when he graduates the world is waiting for him to come out and impart knowledge, and he would be disappointed if he went into a little plant and had to work 18 hours a day, when he thinks he ought to be paid for what he knows. The facts in the case are, as borne out by the experience of men who have gone through this, that the young man ought to be posted and shown that it is the most valuable training he can get if he can obtain a position as manager of a small works, when they are all seeking to go into larger plants. The average man would rather go into a big station and be confined to one department than go into a small gas works where he has to get all of the experience. But I think it is a fact that the old gas men have not posted the young men in that way; in other words, they rather discourage them. They tell them that if they go to a little place they will be buried. You can't bury a good man. It doesn't make any difference whether it is a little town or not, he will come out of it and make a success, and the larger works are looking for him. If the young man could be impressed that this is the training school waiting for him, I think we who are operating small plants would have no trouble in securing good men.

Mr. Burt Mr. Waring failed to take into account one qualification I made in my statement as to the university graduate being the best man for this work; namely, if he is the right sort of a man. I agree with Mr. Waring that, taking the average man from the university and putting him in that sort of a place, he would not make a success. But I think, as between graduates and non-graduates, a graduate would be more apt to make a success of it than the other.

Mr. Haines—Pardon me discussing this a little after Mr. Waring has closed it. I am a great believer in a man having a technical training, whether in a college or an industrial school. I think the industrial school education of to-day or the mechanical engineering course at college is so hard for a man to go through and do credit to himself that, when he gets through, he has stuff enough in himself to do anything. It is no easy thing for a man to graduate from college to-day. I also believe Mr. Waring is wrong when he says that the college professor gives the young man of to-day the idea that the world is at his feet. I have talked with the presidents of three universities in this country and never received that impression from any of them; in fact, they agree with me heartily that the moment a man gets an idea that he is working for a salary he is ruined. He must work for the work's sake, and as soon as he has got there he is worth five times what you are paying him, no matter what that is, or the business.

The Secretary—The remark I was about to make is simply echoing what Mr. Haines said. I don't think Mr. Waring is alone in his ideas as to college graduates, but he is largely in the minority. One of the heads of one of the largest universities in this country told me the most discouraging thing he knew of was that the demand, and consequently salaries, for college graduates had advanced so rapidly. He personally discouraged his own men from taking large salaries, and they had over 500 applications on hand. I think Mr. Waring referred to the matter that the proprietors of small works are not aware of the conditions. They probably do not know it is possible to get college graduates to run their plants. If they did know it they could communicate with the heads of departments of large colleges and undoubtedly secure men who would work for $75 a month or less; in fact be glad to do it for the splendid experience. My own training was just the opposite of Mr. Burt's, as I started out in one of the largest plants, and while I did succeed in picking up a good deal of executive experience, I had a great deal to learn that I would not have known if I had started in a small plant. I move a vote of thanks to Mr. Waring for his very excellent and able paper. [Seconded and adopted.]

A Short Topic.

The President - We have as a short topic for discussion "The Removal and Disposal of Tar." We would like to hear any remarks that members may offer on the subject of removal of tar, or, perhaps, a more important subject, the disposal of tar. Mr. Chubb, what are you doing with your tar?

Mr. Chubb—All the tar from operating is run into a separator, the water in which is kept warm, and we pump all of our tar once a day from the separator into our condenser. We don't water-cool in our condenser. The gas coming through that, of course, separates the tar in pretty fair shape. We burn all of our tar. Coal with us is worth about $4 a ton, and tar is worth 4 cents a gallon. We don't make enough tar to be able to ship it out. We are trying now to work up a sale for it, and are succeeding to a certain extent. We are able to cut down the cost of boiler fuel to half what it was before we did burn it. I believe we do sell a little around the country at 10 cents a gallon, but in a small plant it hardly pays unless you have a ready market for it. As we are located we have no ready market, and if we tried to ship it any distance we would not get anything out of it.

The President - I doubt if you will find anybody that is realizing more from tar than Mr. Chubb. We would like very much to know what others are doing with it. I imagine that, in suggesting this

topic, it had particular reference to a water gas plant. But no matter whether it refers to water gas or coal gas condensation, we would like to hear what anyone's practice is in the removal and disposition of tar.

Mr. Pratt—The question of the removal of tar I will not discuss, but I may say a word or two in regard to the disposal of it. For 3 or 4 years I was connected with a company that utilized or manufactured its tar into tar products of different kinds, and it was always more or less a source of annoyance, care and thought. I think the question of the disposal of tar came up for consideration oftener than anything else, yet we maintained a very elaborate plant for the working up of tar products, keeping one or two men on the road and 14 or 15 tank cars all the time. There never was a time but that we had an abundance of it on hand, yet we felt that we were doing our fair share in disposing of it. However, those things find their way into the usual channels. It is a fact that more tar is produced in this country than can be disposed of satisfactorily at fair prices at the present time. My experience led me to believe that in our desire to seek a market for tar there was always a disposition to make prices a little lower than the other fellow, and the question of the character of the goods was not altogether a paramount one. You will find that the large buyers of tar are strongly recommending that the companies burn as much of it as they possibly can, if they have no market, and that if the product be reduced better prices will be obtained. I think it is a pretty fair proposition that gas companies should burn a larger proportion of the tar they produce than has possibly formerly been the case. It does seem to me—and I have talked the matter over with buyers of this product— they are not projecting the use of it in as many different ways as it seems to us it might possibly be put. In Detroit we succeeded in getting the Park Commissioners to experiment in the use of tar for sprinkling of the boulevards, and with success. It is quite an elaborate matter, though—the preparation of the roads and the sprinkling with tar; but it is certainly very effective in disposing of the dust nuisance. I have been in Detroit 3 or 4 times since last November, and always made it my business to go out to the boulevard where this tar is used, for the purpose of noting the condition of the road. There were some 5 or 6 blocks sprinkled with tar or tar product, and the same number of blocks sprinkled with oil. I noticed that the surface of the street sprinkled with oil is very smooth and glassy, so smooth that it would be dangerous for a horse to undertake to travel upon it; while that sprinkled with the tar is rougher and furnishes sufficient footing for the horses. The owners of automobiles felt that the oil was better than the tar, but it seemed to me that the experience we had in Detroit was going to furnish outlet for all companies in the use of their surplus product. Only the other day in talking with the representative of a tar manufacturing company, I said to him frankly it seemed to me they might find other uses for tar and tar products than those yet discovered. He assured me they had a good many bright minds at work on that same thing, but always get back to the same thought: The gas companies should burn more of their tar than they have heretofore, and that burning a larger proportion would make an increase in the value of the balance.

The Secretary—I have noticed in a rather superficial investigation that probably the large majority of quite small gas companies are allowing the tar to run to waste, generally creating a nuisance in the community and also wasting a very valuable product. A separator for a small water gas machine, complete, can be installed for less than $100, and the market can undoubtedly be worked up for tar, particularly in towns in the Middle-West, for paint for the farmers, by advertising in the local weekly and daily papers, quoting a sufficiently low price on the tar - say $5 for a 50-gallon barrel, and stating its merits as a paint for farmers' use. This will undoubtedly dispose of the bulk of the tar produced in a small plant. Even if it cannot be disposed of for that purpose, it can be burned under the boilers with an equipment that an ordinary workman can make; and while they cannot make enough to run the plant the whole year round, they can make so much that it will ultimately reduce the cost. I have a plant in mind where I made the suggestion that they separate the tar, which they did, and disposed of nearly the entire output for $5 a barrel or 25 cents a gallon at the works. I think the income from the tar sales offset the cost of the generator fuel at the plant.

The President—We will not have time for anything further on the literary programme to-day. It is close to 3 o'clock. I think a motion to adjourn would be in order, unless there is some business that you desire to bring forth.

Mr. G. M. Averill—Before this meeting adjourns I would like to state that the discount period is past with us for this month, and unless the members here present appear at the office sometime this afternoon and liquidate, their food supply will be shut off at noon tomorrow. The office is half a block down on this side of the street. The officer in charge will be glad to exchange banquet tickets for $2. Here is an opportunity for gas men to get on the other side of the counter.

Report of Committee on Nominations.

Mr. Kellogg then presented the report of the Nominating Committee, as follows:

For President.—Jansen Haines, Des Moines, Ia.
For First Vice-President.—A. T. Averill, Cedar Rapids, Ia.
For Second Vice-President.—Geo. Waring, Omaha, Neb.
For Secretary and Treasurer.—G. I. Vincent, Des Moines, Ia.
Council (first year).—A. W. Zahm, Fort Dodge, Ia.; Austin Burt, Waterloo, Ia.; C. N. Chubb, Sioux Falls, S. D.
Council (second year). Campbell W. Fair, Oskaloosa, Ia.; Homer Honeywell, Lincoln, Neb.; E. D. Clary, Burlington, Ia.

Election of Officers.

The President—The report of the Nominating Committee is before you for consideration.

Mr. Pratt—I move the adoption of the report of the Committee and that the Secretary be instructed to cast the ballot of the Association for the election of the persons named. [Motion seconded and carried, and the Secretary announced the ballot duly cast.]

The President—The gentlemen whose names have been reported by the Nominating Committee are unanimously chosen officers of the Association.

Mr. Kellogg—Will you defer the speeches of acceptance until tomorrow.

The President—I believe we should start out in good spirits, and I think it would be well to hear from the new officers of the Association. Everybody is aching to hear from Mr. Haines how he will bear the honors conferred upon him.

Mr. Haines—I thank you very much for the honor conferred upon me. I am sure it will be my pleasure to serve you to the best of my ability. Mr. McLean has set a high standard at this meeting, but I will do the best I can to keep it up. I think our Association has been remarkably successful considering its youth, and I trust we will all give it close attention and use every effort to develop it to the fullest extent, not only this year but in every year to come. I thank you.

Mr. Averill—I am not a speechmaker; that is out of my line. As President of the Cedar Rapids Gas Company, I would like to invite all you gentlemen to join us in an automobile ride around the city. I would like to have you visit our plant. It is not in very good shape at present, but you will see that we are trying to put a roof on it and getting in shape for business. I move you that we now adjourn.

The President—Mr. Waring is present, and while we have called upon him several times to-day, still with his blushing honors thick upon him, I think we must hear from him and know how he regards the Association.

Mr. Waring—Mr. Chairman, this is the first time I have ever been elected to any office in my life, so I am not very experienced in answering a request of this kind; but I wish to say that I appreciate this honor as much as could be, and will do all in my power to make this Association a success. While I imagine my duties will not be very heavy as Second Vice-President, at the same time I will do whatever is incumbent upon me, and more if I can.

The President - Mr. Vincent is the only officer that has been honored with re-election. I think we would like to hear from him, especially as to his views on third terms.

Mr. Vincent - Mr. President, as Secretary and Treasurer of the Iowa District Gas Association I have had so little to do this year that I think what I have done will speak for itself. I have only one request to make, and that is that in the appointment of the Auditing and Finance Committe next year the Secretary be allowed to have a word to say. The difficulties we went through with the present Committee are too innumerable to mention. I spent a great deal of time and trouble in vainly trying to get the accounts straight, and was unmercifully called down by the Chairman, who I think surreptitiously elected himself on the side. However, we finally succeeded in getting through with the little funds left, and if the members will kindly pay up we will have a lot more next year.

A Telegram.

The Secretary—I have a telegram which I would like to read: "Greetings from the American Gas Institute and regrets that I am unable to be present at your meeting.—Walton Clark."

Upon motion, the convention adjourned to 9 A.M., Thursday.

(To be Continued.)

The Vertical Retort House at the Oberspree (Berlin) Gas Works.[1]

[A Paper Prepared by Mr. E. Körting, of Berlin, for the Mannheim Meeting of the German Gas Association.]

The features that a gas engineer expects to find in a well-designed retort house are invariably the same – viz., proper utilization of the ground space, good lighting and ventilation (unaccompanied by great loss of heat), and the utmost cheapness possible. Different systems of setting the retorts, however, involve fundamentally different methods of working, and therefore the houses containing them must be built in thoroughly appropriate fashion.

The problem at Oberspree has been to construct a house suitable in all respects for the working of vertical retorts, and three different operations—to be performed from three different positions in respect of the retorts, have had to be duly borne in mind. Of these operations the clinkering of the furnaces is the most severe work, and is carried out on the ground level at one side of the settings. The charging of the retorts with coal and of the generators with coke is effected from the traveling platform above. The work is not exhausting, but in summer is liable to try the men, owing to the heat evolved. The heat in question is, however, by no means comparable to that given off from the opening in the roof; so that smoke and steam pass away at once, without inconveniencing the men on the top of the retorts. This situation for the conveyor is preferred to one beneath the retorts, because it keeps all the moving parts and the coke itself in sight. Power to retain the conveyor and the coke under constant observation is of great importance—tending to the avoidance of accidents and insufficient or else excessive quenching. The small distance between the two conveyors is also advantageous, inasmuch as it simplifies the commingling of the two lots of coke, when further common treatment is requisite. The wide space (30 feet) between the two benches, the broad opening in the roof, and the large sliding doors in the end walls of the house insure a thorough illumination and ventilation of the central passage, which, indeed, is really nothing but an open well.

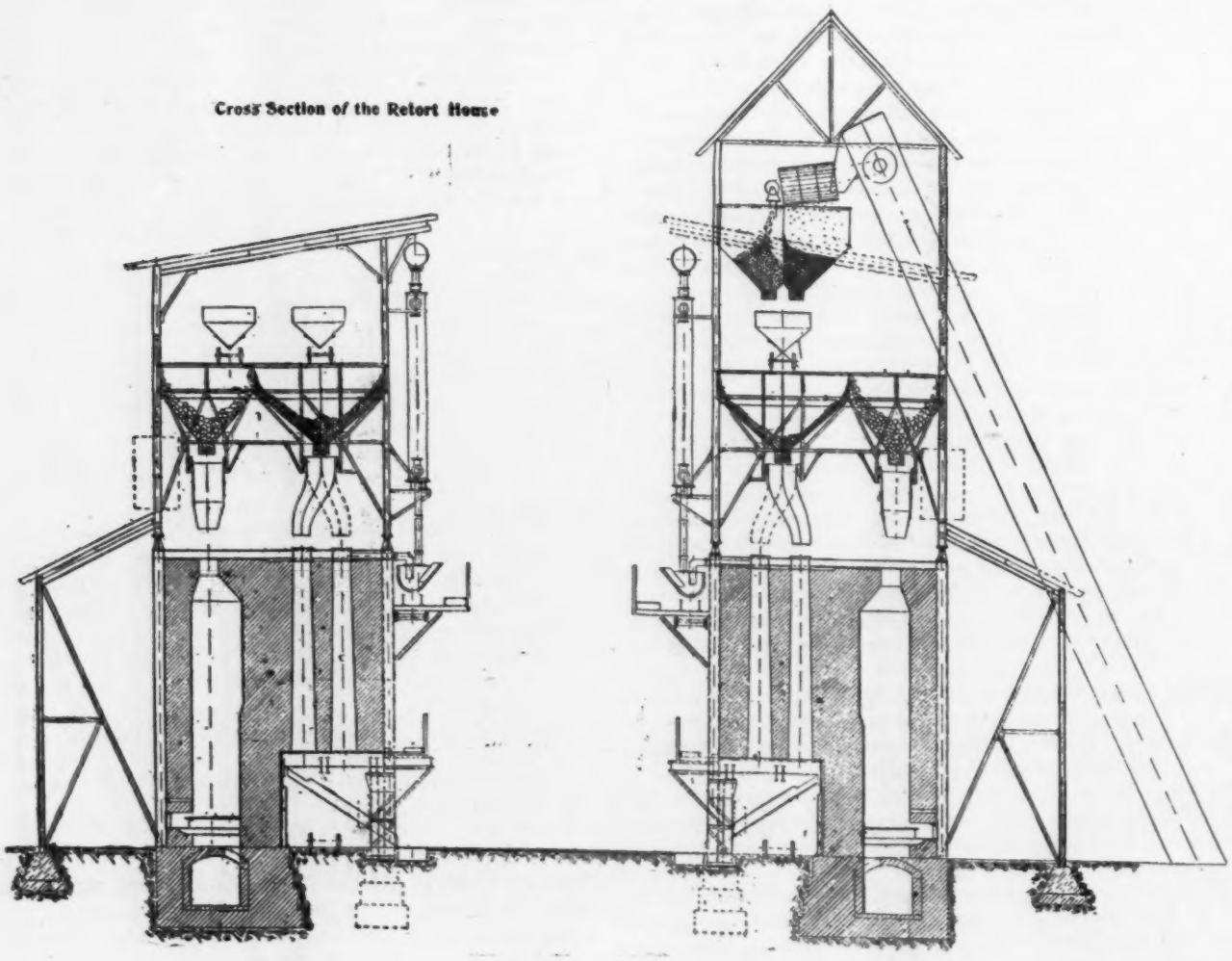
Practical experience gained in working the house has shown it to fulfil every requirement and to have no defects. In building it, convenience and economy were studied most of all. Wide roof spans are known to be an expensive item in constructional ironwork, and since in erecting Coze settings the main buckstaves are often employed to support the overhead coal hoppers, it occurred to the author to go further and use the brickwork charging side of a Coze furnace. The retorts are discharged on the ground level at the opposite side of the settings; but the man who attends to this operation has no hard labor to perform, and is not exposed to a high temperature, for as a rule he stands some 10 feet away from the brickwork.

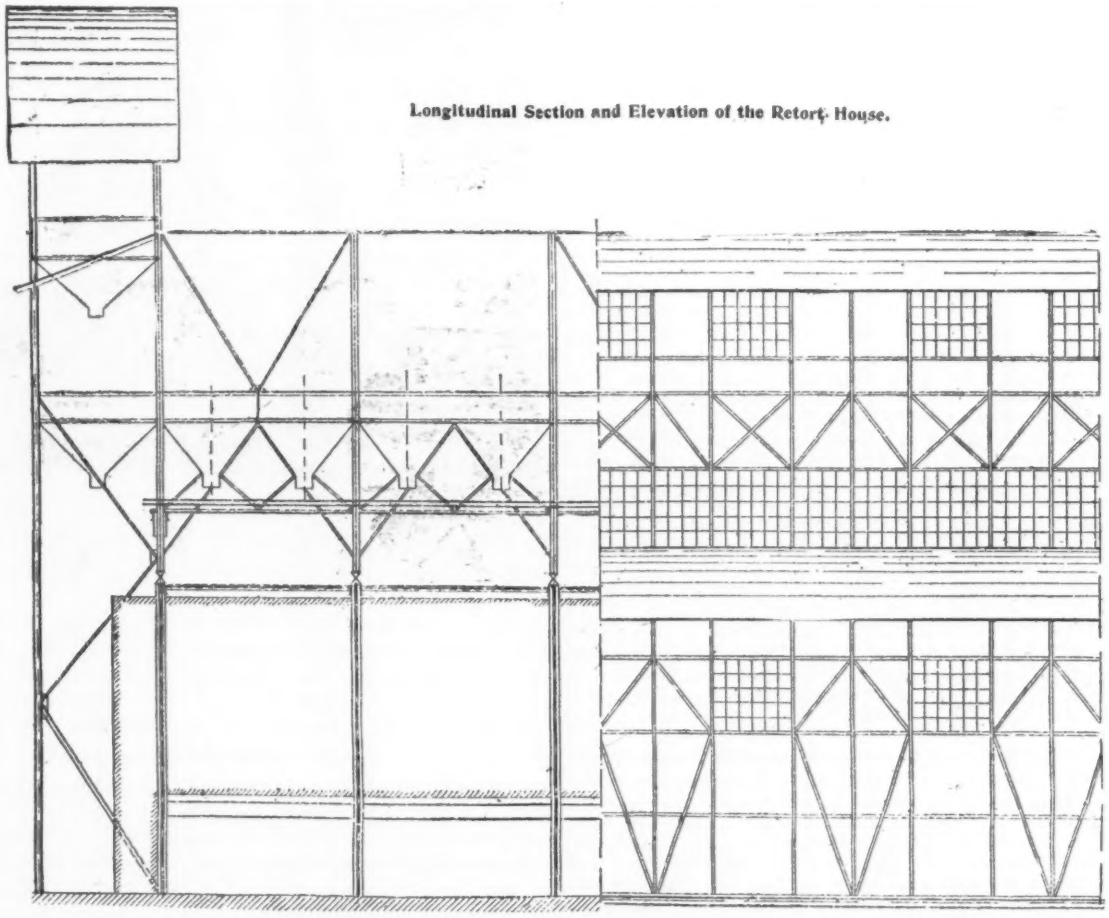
It is thus evident that the coolest place outside the house should be assigned to the men who clinker the furnaces, and if the house is designed to contain two rows of benches the discharging spot should be between them. But the clinkering operation does not require a lofty space for its due performance – a moderately low addition being sufficient, and so the wall of the retort house itself at Oberspree is identical with that on the generator side of the settings. As this wall is pierced with numerous windows above the top of the settings, the men who charge the retorts are close to the fresh air and can have as much of it as the weather renders desirable. The roof rises towards the center of the house but does not extend far beyond the inner walls of the benches—thus leaving a very wide space uncovered, through which the hot air may escape. The De Brouwer conveyors are placed immediately in front of the settings, under the central of the settings to carry the roof. The author has indeed had an opportunity of inspecting a special form of retort house built at Bornemouth by Mr. Harold Woodall (one of the inventors of the Woodall-Duckham setting), in which the buckstaves are simply prolonged upwards and made to support the roof. This method of construction may very possibly answer in individual cases, but it must subject the component parts of the roof to uncontrollable stresses and would probably be prohibited under the German building laws.

The author has therefore made careful measurements of the deformation that has occurred in the well-braced retort benches at the different Berlin gas works during the past many years, and has established the fact that, generally speaking, it has been very slight indeed. Armed with this knowledge, he consulted Herr K. Bernhard, the well-known statistician and civil engineer, in order to see if some

1 *Journal of Gas Lighting.*

Cross Section of the Retort House





Longitudinal Section and Elevation of the Retort House.

method of construction could not be devised which should exhibit the advantages of the English plan without its defects - in other words, some method of construction in which the backstaves of the retort settings should be required to take vertical loads only, and should be free to move in other directions under the roof without affecting it in the least. This has been accomplished by fitting the tops of the buckstaves with special sliding bearings, on which the tie-beams of the roof lie. The tie-beams act as supports for the coal bunker and the conveyor rails. The buckstaves are prolonged upwards still further to carry purlins that support the roof-sheeting. The tie-beams are carried at their ends on the side walls of the house, which are so tied to the foundations of the retort settings as to form a rigid whole. Thus the bracing of the furnaces is only employed to carry vertical loads; the lateral stresses being taken by the foundations and the outer walls. Security is obtained by connecting together the ends of the buckstaves that project above the brickwork by means of stout longitudinal and transverse ties.

A glance at the accompanying illustrations will show that arrangements have been made in the Oberspree retort house for the first time to keep the large coal separate from the small, and only to mix them when ready for carbonization. It need hardly be pointed out that if a vertical retort is charged with fine coal, gas is evolved so rapidly as to set up a high positive pressure - a trouble that is not met with when large coal or nuts is used. To prevent the formation of a high pressure, it is not necessary that the entire transverse section of the vertical retort shall be filled with nuts. All that is needed is a vertical column of nuts extending from the base of the retort to its top, so that an open channel for the escape of gas may be present. Such a channel can easily be produced within the retort by charging it simultaneously, from two receptacles, with nuts and with small coal respectively. At Oberspree the broken coal falls from the elevator into a sorting drum, which fills one overhead store with large, and another with small coal. Each grade travels by itself to the hoppers over the retorts, which are divided into two continuous departments by means of vertical partitions. The partitions extend downwards close to the emptying slides and coincide with a dividing wall in the charging vessel. Thus when the lever is pulled the latter receives a charge of coal in which the lumps and the smalls are still separate. Separation, indeed, persists till the retort mouthpiece is reached, and yet the whole arrangement works quite smoothly.

The author is convinced that a similar device would behave well if applied to inclined or horizontal retorts. It is well known that separation begins to occur directly mixed coal is fed into an elevated store the lumps travelling to the sides of the vessel and the small remaining in the middle. The conditions that govern the satisfactory charging of a retort are totally different when the coal is large and when it is small. The operation cannot therefore be efficiently performed if the size of the coal varies constantly. If a gas engineer is enabled always to put a uniform mixture of large and small coal into his retorts, he is in a position to obtain better results than he otherwise could, and the simplest and best method of achieving this end is to keep the two sizes apart until the very moment of charging.

The English Gas Range.[1]

The English type of rented gas range differs from our own in several important particulars. Indeed, it can hardly be said that there is an American type of gas range, for, as shown in the exposition held here in January, ranges high and ranges low, ranges with ovens on top and underneath, ranges complicated and simple, are put out by the various makers of these appliances, and while one may not be essentially better than another of the same price, they are different. But the English range, whether made by one firm or another, is of one unvarying type, and is in several respects radically unlike the American ranges.

Two of the main features are the "grill," as the top is styled, and the oven for roasting meat. The "joint," which plays a much more important part in English households than in our own, is hung by a hook from the top or from a grid of the roasting-oven, according to its size. Heat from the flame at the bottom rises on all sides of the hanging joint and cooks it. There is no floor to the oven, and the juice from the meat falls into a "tin," as the English term what we should call a dripping-pan, which is set upon the floor beneath. In this may be cooked the famous Yorkshire pudding, which is made of a batter poured into the pan and cooked by the hot juices of the meat, somewhat as we cook dumplings. To an American housekeeper this arrangement for catching drippings might seem both inconvenient and untidy, since dust can sift into the pan, and there is more or less risk of it being upset, or of an ingenious cat or dog getting at it if left unwatched after the joint is done. But it is the time-honored practice in England.

1. From *Gas Logic*.

Broiling is done by placing the meat on a gridiron under the "grill" or top burners, which are higher above the top of the range than ours are. It is possible to toast bread under the burners of an American "hot plate," if the bread is placed on the bottom of a pan close under the flame, and this is the same process applied to meat. The burners used for stewing or cooking, as in our "hot plates," the English call "boiling burners."

For roasting meat as we roast it in a pan or "tin," which is seldom if ever done in the English range, the dish is placed on what we call the deflecting plate, called in England the "browning plate."

An important difference between the English rented range and our own lies in the fact that the English range is lined with asbestos wool packing, which cannot be cleaned except by putting it into a furnace and burning off the grease. This is done with every rented range which comes in for cleaning. In this city the rented range is put in a potash bath and thoroughly cleansed, but if this treatment were given to a range lined with asbestos the asbestos wool would be so saturated that it would not dry for days or even weeks.

Like other iron and steel work in Great Britain, the English gas range is heavy as compared with the American. English locomotives and rails, and English machinery are generally much heavier than ours. From the beginning of manufacting in this country the American mechanic has aimed at getting his results with tools and machinery as light and easy to handle as possible—a course which may be partly due to the greater ease of transporting light machinery over rough country in the beginning, and partly to American ingenuity and handiness, which makes the lighter machines practicable.

Our double-oven ranges have instead of the asbestos an air space, which serves precisely the same purpose, that of preventing radiation.

A variety of gas stove rented in England is known as a "prepayment griller," from the fact that it is rented with the slot meter or prepayment meter, and consists of the "griller" for cooking meat, toasting bread, etc.

Another peculiarity of the English system of renting ranges is that of providing, in many instances, a bluestone or flagstone, on which the range is set. This is made necessary by the open lower oven, which might easily cause fire without some such protection.

English ranges never have the broiler shut in as do ours. An American cook would find the odors arising from this open cooking disagreeable; but windows are always open in an English kitchen, and the gale which blows through it carries away the smell of meats and soups. Moreover, English cooks have no conception of the labor-saving devices common here. They always have put up with certain inconveniences, and always expect to. A Scotch lassie, not long ago, said that she received $19 a month in New York for work not so arduous or disagreeable as that which brought her only $5 a month in Glasgow. The heavy, inconvenient English gas range, the heavy iron saucepans and other kitchen utensils are the normal environment of the servant in London.

Her situation is much like that of the old farmer's wife, who, after a long life of hard work, found that her husband was about to build a new house. Without consulting her he filled the kitchen with what he considered all modern conveniences, and finally brought her to see it, and asked her with pride if it was not convenient. Being an honest old soul, she was driven to admit that to her it seemed that everything was in the wrong place.

"But why didn't you say so in the beginning?" asked the surprised husband.

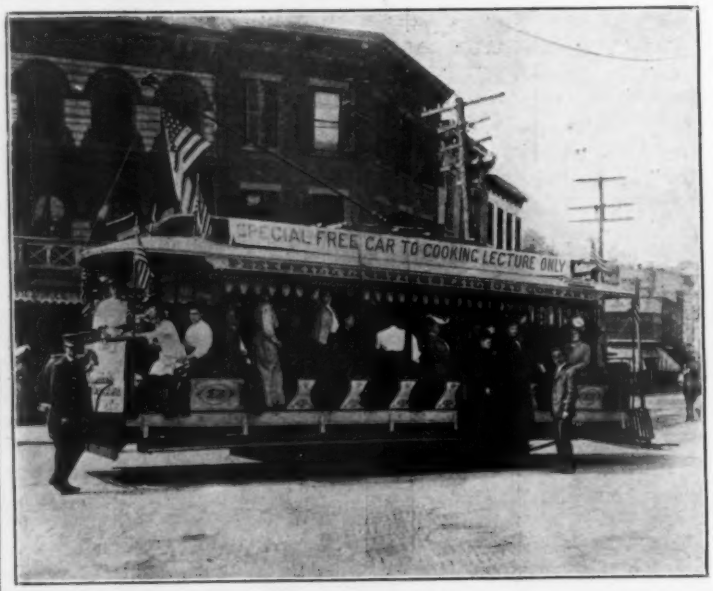
"Well," she replied, with the patience born of many years of 'putting up with things' and strenuous economy, "I never expected to have things what you call convenient, and so I didn't think it was best to say anything about it."

The American gas range, like most other kitchen developments in this country, is contrived especially to suit the needs of the deft and intelligent worker. With its aid kitchen work becomes almost like play, and that is a condition of things never contemplated in English household economy.

Conservative English households are, in fact, in somewhat the situation that plantations in the South were in ante-bellum days. A Northern traveller expressed surprise at the heavy, clumsy hoes and spades used in the fields, as compared with the light, easily handled instruments of the Northern farm. He was told that the laborers would not know how to use the lighter tools, and would break them up "in no time." In order to get most value out of a range of the light and well planned American type, it must be used with knowledge.

How Did the Ossining Division of the Northern Westchester Lighting Company Do It?

The photograph well shows a trolley car occupied by travellers about to "assist" in a demonstration lesson as to the use of gas for culinary and other purposes, recently given at Peekskill, N. Y., by the Northern Westchester Lighting Company. Mr. W. P. Secord, the Engineer of the Company's gas division, having determined that a cooking exhibition should be given, was somewhat handicapped by the fact that the place selected for the display was in a skating rink, located quite far from the center of the town. The problem was solved, however, by the fact that the trolley system sent cars to the rink, wherefore, cars were started from the center of the town, operating under 6 minutes' headway, to the rink. Guests to the number of



This is the Way it was Done.

400 listened to the lectures, and of these 320 availed themselves of the free transportation. The return service required 5 cars, each of which was well occupied by those who had been given wrinkles respecting the use of gas in the kitchen and the bathroom.

An Analysis of the Distribution Losses in a Large Central Station System.

At the May meeting of the Boston Branch of the American Institute of Electrical Engineers Mr. L. L. Elden, of the Edison Electric Illuminating Company, read a paper on the "Distribution Losses in a Large Central Station System."

He pointed out that the particular system under consideration consists of two main generating stations, one generating 3-phase, 60-cycle alternating current exclusively, and the other low tension direct current. In addition, there are 18 sub-stations located at distributing centers for the purpose of supplying either direct or alternating current for commercial uses from the high pressure service derived from the main generating station. There are also two small generating plants located at remote parts of the company's territory which are still in service independent of the main system. These generating plants will be discontinued as soon as is convenient, and be converted into sub-stations supplied with current from the main system. Table I. shows the main station statistics of the system.

TABLE I.

Cities and towns served	30
Area of territory, square miles	450
Population served	1,000,000
Miles of streets in territory	1,800
Miles of streets covered by company	750
Maximum distance reached from main generating station, miles	45
16-candle power lamp equivalents connected	1,600,000
Transmission voltages	2,300 / 4,600 / 6,600 volts, 3-phase.
Types of distributing circuits	2,300-volt, single-phase. 2,300-volt, 3-wire, 3-phase. 2.300/4,000.

It was found convenient and economical to maintain the 2,300-volt and 4,600-volt service which was in use in certain locations, rather than to abandon the relatively large equipments represented by the existing installations. These lines are used for comparatively short distances, and no further extensions of them will be made, all new transmission lines being constructed and used for the 6,600-volt service.

The 2,300-volt, single-phase circuits are used in residential districts where no motor service is required; the 2,300-volt, 3-wire, 3-phase circuits being used in the smaller districts where limited areas are to be served for residential lamp and motor service. The 2,300 to 4,000-volt, 4-wire, 3-phase circuits are used in the districts covering large areas to be supplied with residential lamp and motor service.

The territory supplied is divided into two distinct districts, in one of which only 115-230-volt, 3-wire direct current service is supplied, and in the other only 115-230-volt, single-phase, and 230 and 550-volt, 3-

phase service is furnished for commercial purposes. In addition there is also the street lamp service of 6.6 amperes, either direct or alternating current according to the location. In the growth of its business during the past 25 years the company has absorbed the business of other companies as well as having enjoyed the natural growth of its own lines. A few years ago it was found that some 20 different forms of service were being supplied, with the attendant complications in operating the system. It was apparent from a comparison of the energy sold with the energy generated that the difference was too great, and to ascertain the reason a complete survey of the whole system was undertaken with a view of eliminating the uneconomical features. This investigation involved an examination of each customer's connected load and demand, the capacity of and demand on each transformer in the alternating current district and the losses in transmission lines, feeders and mains, the operation of all station apparatus, the accuracy of all watt hour meters, and in general all the details of the service. As a result of this inquiry it was found advisable to proceed with the changes necessary to remove the objectionable and uneconomical features. These changes, which were commenced in 1903, affected the following parts of the system:

First, a certain district was specified in which no form of service other than 3-wire, 115-230-volt, direct current would be supplied. This made it necessary to transfer all the alternating current customers affected to the direct current system, remove all transformers in the district and reconnect the alternating current mains as a part of the direct current system. The 500-volt service was abandoned, and all motors located in the direct current district were adapted for 230-volt direct current service, while such as were outside the direct current district were replaced by alternating current motors. A number of new sub-stations were installed in the direct current districts to serve the rapidly increasing business, and at the same time to reduce the excessive losses in feeders and mains, by shortening and rearranging the distributing points of existing feeders, as well as of the new ones.

In the alternating current district, secondary networks were installed and the number and capacity of transformers reduced, the total reduction in this case being 30 per cent. of the installed capacity. Changes in the sub-station apparatus were effected by the introduction of new apparatus, all adapted to supply the standard forms of service.

The results of these changes are shown in Table II.

TABLE II.

	Kw. Hours Generated.	Kw. Hours Sold	Per Cent of Generated.
Year ending June 30, 1903...	49,122,344	31,569,741	64.26
" " " 1904 ..	57,531,315	37,220,199	64.67
" " " 1905 ..	64,161,987	41,910,281	65.31
" " " 1906...	74,582,311	52,003,000	69.82

In 4 years there has been an increase of 5.56 per cent. in the percentage of sales as compared with the manufactured energy. This result is an average for the whole year 1906, but in the last 6 months the percentage has risen to 73.65, which indicates the possible future results.

As it is the practice of this company to use motor generators in preference to rotaries to transform the 3-phase alternating current into 115-230-volt direct current, it may be suggested that a further economy could have been effected by the use of rotaries. The motor generator equipment of the company comprises 36 units having a total capacity of 10,210 kilowatts, and varying in size from the 1,000-kw. direct connected sets to the 60-kw. Edison bi-polar belted units which have been retained in service in some of the smaller stations. In Table III. are shown the actual results of the operation of this apparatus for the year 1906, and also the estimated results of the use of rotaries of the same size, operated in the same manner as the motor generators were, and at an efficiency assumed from the manufacturers' data on such sizes of apparatus.

TABLE III.

	Kw-Hours Received.	Kw-Hours Delivered.	Per Cent. Efficiency.
230-volt motor generator ..	31,331,406	25,803,990	82.4 actual.
230-volt rotaries	30,004,639	25,803,990	86.0 assumed.
Energy saved by rotaries ...	1,326,767	....	....

The operating efficiency of the rotaries as used is estimated at 87 per cent., less 1 per cent. for the power used by the cooling apparatus, while the motor generator efficiency used was 82.4 per cent. The saving by the use of rotaries represents the premium paid for the use of the more reliable apparatus, in addition to which there is to be added the slightly larger investment necessary in the purchase of motor generators. Owing to the well known difficulties incident to the operation of 60-cycle rotaries in a large system where continuity of service is placed above all other considerations, it is a question of individual opinion as to which type of apparatus a company should adopt.

Table IV. illustrates the comparative losses in the alternating current and direct current systems, omitting the street lamp service.

TABLE IV.

	Per Cent. A.C.	Per Cent. D C.
Total losses, generating station to customers' meters	41.1	20.00
Efficiency of system.	58.9	80.00
Total losses from sub-station to customers' meters.	24.2	7.54
Efficiency of distributing system	75.8	92.46
Area of system per cent. of total.....	99.1	0.90
Connected load per cent. of total.	21.6	78.40
Connected load in kw.....	17,300	62,700
Transformer capacity installed, kw	10,388	....
Transformer capacity in per cent. of connected load	60	....
Energy delivered in per cent. of total generated, approximate	30	70.00
Street Lighting System.		
Total losses from generating station to street lamps	15.2	31.90
Efficiency of system.	31.9	68.10

In the alternating current system the total losses, including those in the transmission circuits, step-down transformers and distributing circuit losses, also meter losses, aggregate 41.1 per cent.; thus the system efficiency is 58.9 per cent. Eliminating the losses in the transmission lines, step-down transformers, regulators, boosters, etc., the total losses in the distributing circuits, meters, etc., aggregate 24.2 per cent., with a resulting efficiency of 75.8 per cent. from the sub-station to the customers' meters.

In the direct current system the total losses, including those in transmission lines, motor generators, tie lines, feeders, mains, meters, etc., aggregate 20 per cent. Eliminating all losses in the direct current system except those which occur between the direct current busbars in the sub-station and the customers' meters, the total loss is 7.54 per cent. in terms of the power delivered at the sub-station direct current busbars.

Two forms of street lighting service are in use, each involving the use of a different type of apparatus. In one case, motor generators are used to convert alternating current into 6.6 ampere series direct current, and in the other case, constant current transformers are used to obtain the 6.6 ampere series alternating current for similar service.

Tables V. to IX. inclusive present a summary of the year's operation, but in actual service these tables are made up each month. In these tables, with the exception of such items as are preceded by an asterisk, all the data shown are the results of watt-hour meter readings. In the case of the excepted items, computations were made from reliable data furnished by the manufacturers, supplemented in many cases by company tests.

TABLE V.—*Distribution of Energy for Year Ending June* 30, 1906.

	Kw. Hours.	Per Cent. of Total Generated	Per Cent. of Energy Transmitted.
Commercial sales	52,003,000	69.82	....
Company use	2,774,383	3.72	....
Total losses.....	19,270,616	25.87	....
Unaccounted-for energy.....	441,437	.59	....
Total generated	74,489,436	100.00	
Sub-Division of Total Losses.			
Losses in station apparatus.....	10,536,117	14.21	16.60
Losses in inter-station lines	2,920,653	3.92	5.92
Losses in feeders and mains	5,763,846	7.74	10.50
Total losses.....	19,270,616	25.87	

The losses in the individual commercial distributing circuits were determined by the drop of potential method, a constant being obtained for each circuit by taking a large number of pressure tests under all conditions of load. The losses in the direct current mains were estimated in the same manner. The losses in the street lighting circuits were calculated from the known length of the circuits and these results further checked by voltage readings at the station, while the circuits were in operation with a known number of lamps burning. Each year the company makes thousands of tests of consumers' meters, and in 1906 the average results of all such tests showed that the average meter error was 2.6 slow. This factor has been used to account in part for some of the unknown losses, the total thus accounted for being about 1.5 per cent. of the total generated.

Table V. shows in the first part a summary of the principal items without sub-division. The latter part of the table divides the losses into sub-heads, which are repeated individually in the later tables.

In Table VI. the losses in station apparatus are sub-divided and distributed among the various pieces of apparatus used in station operation.

TABLE VI.

	Kw.-Hours.	Per Cent. of Total Generated.	Per Cent. of Input.
230-volt motor generator	5,527,416	7.42	17.60
500-volt " "	373,059	0.50	33.60
Series-arc motor generator	2,403,471	3.22	25.50
Step-down transformers	1,010,848	1.36	3.23
Constant current transformers	118,548	0.16	5.40
Potential regulators	65,353	0.09	5.53
Batteries	807,067	1.09	43.20
Boosters	211,264	0.28	63.00
Balancers	67,725	0.09	...
Water rheostats for testing	1,366	..	...
Total	10,586,117	14.21	

Table VII. indicates the losses in the inter-station transmission lines:

TABLE VII.

	Kw.-Hours Lost.	Per Cent. of Total Generated.	Per Cent. of Input.
Three-phase, 2,300-volt lines	1,556,981	2.09	8.41
Three-phase, 4,600-volt lines	98,813	0.132	1.52
Three-phase, 6,600-volt lines	770,577	1.04	3.55
230-volt direct current tie lines	404,282	0.66	18.30

Table VIII. shows similar data from feeders and mains:

TABLE VIII.

	Kw.-Hours Lost.	Per Cent. of Total Generated.	Per Cent. of Input
*2,300-volt commercial lines	1,854,854	2.50	25.10
*230-volt D. C. feeders	1,901,948	2.55	4.93
*230-volt D. C. mains	641,343	0.86	2.00
*500-volt D. C. feeders	74,466	0.10	9.15
*Street lamp circuits	809,103	1.08	9.53
*Meter potential losses	482,132	0.65	..
Total	5,763,846	7.74	10.50

Table IX. shows the percentage of sales in each sub-station district, as compared with the energy delivered to that district for distribution. Stations 1 to 13 include the direct current district and a portion of the alternating current district. Nos. 14, 15, 17 represent stations to which energy is sold wholesale to be redistributed by the local companies controlling these districts. Stations 16, 19, 20, 23 represent sub-stations, each of which supplies energy to one or more cities or towns in the suburban districts. Stations 18, 25 represent small generating plants which are still in service in two of the recently acquired suburban districts. Station 16 supplies a district where many motors are used, also a large number of street lamps. Station 18 does the same kind of business, but on a smaller scale. Stations 19, 20, 23, 25 supply energy to districts covering large areas where residential lamps and a moderate amount of street lamps are the only consuming devices.

TABLE IX.

Station.	Sales in Per Cent. of Energy Received.
1—13	68.9
14	100.0
15	100.0
16	75.0
17	98.3
18	63.5
19	55.4
20	52.4
23	55.9
25	72.8
Average	69.8

The preparation of this data involves the labor of 1 man for about 1 week each month. It is his duty to watch the operation of the system through the statistics furnished to him by the operating and sales departments, comparing them with data which have been prepared representing the possible maximum conditions of efficiency of operation of every piece of apparatus on the system, and reporting for investigation any divergence from the estimated average operating losses. The curves which are prepared monthly show the percentage of losses in the energy handled by each motor generator, storage battery, balancer, booster, exciter, step-down transformer, constant current transformer, or any other station apparatus, thereby providing means for detecting at once any unusual results; thus furnishing a check on the operation of the system. In addition to the value of this information from an operating point of view, it is very desirable in indicating the worth of each district as a revenue producer, thus making it possible to judge accurately of the advisability of making extensions for the different classes of service.

In the discussion which followed the paper, Mr. Elden stated that the power factor on his system as a whole often runs as low as 75 per cent. during the hours of light load, but at night it is brought close to 100 per cent. by the use of synchronous apparatus. One-third of the motor generators are of the synchronous type. Some induction apparatus is used to prevent surging. About 4 per cent. of the company's output is used by the company itself, including the power for station auxiliaries. On the whole, the system meter potential losses aggregate 110 kilowatts. The load factor of the whole system for the year is about 40 per cent.; that of the main alternating current station, which does the bulk of the work, is about 55 per cent. The meters in the stations, which are the most important, are checked monthly, and any error is eliminated before it assumes a large value.

ITEMS OF INTEREST FROM VARIOUS LOCALITIES.

THE Dowagiac (Mich.) Gas Company has been incorporated with a capital of $100,000,

THE Clinton (Ills.) Gas Company and its properties have been purchased by the Gas and Electric Development Company, the controllers of which latter are residents of Philadelphia.

MR. HENRY J. BLAKSLEE, has been appointed Superintendent of the new bureau of gas and electricity for Utica, N. Y.

MR. GEORGE W. BRINE, Vice-President of the Georgia Railway and Electric Company, has been elected President of the Atlanta (Ga.) Gas Light Company, vice Mr. W. L. Cosgrove, resigned.

THE Butler, Morris County, N. J., Gas-Lighting and Heating Company, has mortgaged its property to the Carnegie Trust Company in the sum of $50,000.

MR. JOHN BERNLOEHR, a prominent resident of Indianapolis, Ind., and for many years in the employment of the Indianapolis Gas Company, died at his home in that city the morning of June 23. He was in his 74th year, and is survived by his widow and four sons.

THE Connecticut Assembly has given its consent to the merging of the properties of the Stafford Springs (Conn.) Electric and Gas Company with those of the Rockville (Conn.) Gas and Electric Company.

MR. JOHN HEARNE, who has been connected with the meter manufacturing business for over 30 years, and who is certainly well known to the trade in this vicinity, has resigned his position with the meter department of the Oakland (Cal.) Gas and Electric Company, in order to assume a responsible position with the New York Improved Meter Company, of New York.

THE Western Gas Construction Company, of Fort Wayne, Ind., has been awarded a contract for the construction of a gasholder up to retaining ½ million cubic feet, on the plant of The Gas Light Company, of Augusta, Ga.

THE Board of Public Service, Hamilton, O., has decided to keep the municipal gas plant out of action. Natural gas will be laid on January 1st next; meanwhile the city will purchase gas from the Hamilton Gas and Coke Company.

MR. H. L. OLDS has become associated with the Commercial Securities Company, having resigned from the service of the Lloyd Construction Company.

JUDGE LACOMBE has named October 21st as the month and day for argument on the report of Special Master Masten in the matter of his findings in the hearing respecting the validity of the 80-cent gas rate for New York city.

THE Northampton (Mass.) Gas Company has about completed its main extensions to and through the outlying sections of Florence and Bay State.

AN odd accident, resulting in personal accident, marked the recent baseball game, between the respective teams of the Omaha Gas Company and the International Harvester Company. In the fifth inning, J. W. Walt, the pitcher for the latter team, delivered a ball in such manner that the strain caused a fracture close to the elbow.

A CORRESPONDENT in Detroit, writing under date of the 28th ult., says: "The Columbia Gas and Electric Company which controls the lighting properties in Cleveland, O., is erecting there a skyscraper, the feature of which will be a tower 20 stories high, from the dome o which will rise a statute of liberty, with a crown studded with electric lights. The statue will hold a torch from which a flame of gas will burn constantly, and at the exact hour every hour in the day and night the flame of gas will rise 25 feet and remain burning 1 minute. As the time will be observatory time, and the time machinery entirely automatic, it will be the general time regulator for Cleveland and vicinity. Owing to the height of the tower and the flame, the light will be seen a distance of 20 miles."

GET a copy of Editor Livingston's *Gas Logic*, for June last. It certainly is a beauty. His address is No. 1 Madison avenue, N. Y.

"HERE is the storyof a recent exploit of Capt. Gartley and his merry men, who may think something of themselves as marines. In fact, they are beginning to look about when the name of Admiral McKay is mentioned; but be the Gartleyites ever so nautical, not a man-jack of them can or ever will be wiser to not boxing the compass than the Boston Admiral; God bless him!" So writes a Philadelphia correspondent, in inclosing the following news from the Quaker City, which will certainly be interesting to many, including that prince of nautical men, Commander Allen, of the New York Mutual Gas Light Company. "On the morning of the 22d ult., to the accompaniment of the tooting of numerous whistles and the shouts of a small but enthusiastic band, the trim little yacht, 'Helen,' of the U. G. I. Yacht Club. took her initial plunge into the waters of the Delaware river from the Tioga street wharf, Philadelphia, Pa. Miss Helen Gartley, daughter of Mr. William H. Gartley, the landsman skipper of the U. G. I. Company's Philadelphia works, broke a bottle of Pommery over the bow of the yacht as it was swung by a steam crane into the water from the shops in which the craft was built. Preceding the launching Mr. Gartley made a brief speech, and letters of regret at not being able to be present were read from Thomas Dolan and several other officers of the Company. A luncheon followed at the office of the plant. The boat was built entirely by the members of the Club, all of whom are employees of the United Gas Improvement Company in the works at Richmond, during their leisure time, after their work for the Company was completed. It took nearly 10 months to build from the time the keel was laid. The 'Helen' was designed by M. A. Orlopp, the master mechanic of the works, who is a naval constructor and architect. It is of the whaleboat type, 30 feet in length between perpendiculars, 11 feet beam, and has a mean draft of 6 feet. The construction is of live oak throughout, with cedar planking below the water line, and the motive power will be supplied by a 60-horse power compound marine engine of the vertical tppe, the steam being generated by a boiler of 120-horse power. The craft is decked throughout, and has commodious cabins, so that it can be used for cruises at sea as well as on inland waters. The members of the Club who constructed the yacht are: H. B. Williams, M. A. Orlopp, Thomas B. Johnson, Michael Lynch, F. B. Welles, Wm. McKuen, Wm. Pearce, Harry Odenath, Harry Ott, Nathan Ott and Fred. Rudolph."

MESSRS. A. L. ZWISLER, B. C. Dickinson, C. A. Dewing. H. H. Coddington and others have filed articles incorporating the Kalamazoo (Mich.) Gas Light Company, which concern is formed for the purpose of manufacturing the Zwisler inverted incandescent gas lamp. The Company is capitalized in $100,000.

THE New York Stock Exchange has listed $7,900,000 refunding 5's, Peoples Gas Light and Coke Company, of Chicago, due 1947. In the application it is shown that the net earnings of the Company for the twelvemonth ended December 31, 1906, were $4,892,741.

SUPERINTENDENT MEAGHER, of the Albuquerque (N. M.) Gas, Electric Light and Power Company, rejoices over the completion of the gas compressor plant booster ordered some time ago. It looks to us that Mr. Meagher's people will soon have to put up a retort house. Coke is worth money in his territory.

LIGHTS of the Humphrey gas arc type will be used for the lighting this year of the conference grounds during the protracted summer meeting at Chautauqua Lake, N. Y., this year.

THE Houghton (Mich.) County Gas and Coke Company, with headquarters in Hancock, Mich., is about to remove its business office to the Galey building. Two floors will be required for its purposes.

MR. FRANK E. HOLDEN, having buttoned up all overhangs in connection with the gas and electric lighting supply of Woonsocket, R. I., sailed for Europe the last week in June. He deserves a vacation, and a long one at that.

THE Gloucester (Mass.) Gas Light Company is conducting a course of demonstration lectures on the use of gas in the kitchen, the series to last a period of 3 weeks from the 1st ult. The lecturess is Mrs. A. M. Swan, of New York.

MR. GEORGE M. TIDD, General Manager of the Scranton (Pa.) plant of the American Gas Company, of Philadelphia, Pa., has just returned from an inspection of the Company's other plants in various cities. On his return, in speaking to a reporter of Scranton *Truth*, he had this to say of the Scranton output: "No other city in the country of similar population can compare with Scranton in the extent to which electric lights are used for advertising and decorative purposes. Then, too, Scranton is making a larger use of electricity in proportion to its size and population than any of the cities which I have visited. Everywhere I have heard favorable comment on the enterprise and good taste which the business men and merchants of this city have manifested in illuminating their premises. In Rockford, Ills., our Company has done that which it has to do for Rockford in the matter of electric lighting."

MR. W. E. TERRY has resigned from the service of the Meridian (Miss.) Light and Power Company, in which he acted as Secretary and Treasurer. Too much "executive ability" on the part of brother (?) officers was the impelling cause.

W. W. HESS, of Philadelphia, is the head of the syndicate that is proposing to establish a gas works in Havre de Grace, Md.

OBERIN CITY, Ore., wants a gas works. Mr. James Steel is the moving spirit in the enterprise. If we mistake not, Mr. Steel is or was Bank Examiner for Oregon.

MR. S. J. ABBOTT has been elected a Director in the Bay State Gas Company, replacing J. E. Addicks.

THE Lynn (Mass.) Gas and Electric Company will extend its main system to and through the outlying district known as Lynnhurst, the extension to be completed by September 1st.

THE plant of the Belleville (Ont.) gas works was set on fire by an incendiary some days ago. The damage was slight owing to the wisely concerted action of those in charge. It is asserted that the criminal is one of the employees discharged when the new Manager, Mr. Thomas Gardner, assumed charge there some days ago.

"L. W. S.," writing under date of June 27th, says: "In the case of Wilbur Cornwell against the Detroit (Mich.) Gas Light and Coke Company, heard before a jury in Judge Rohnert's Court last Wednesday, a verdict was rendered in favor of the Gas Company. Cornwell's wife was asphyxiated, and he himself narrowly escaped. The Company admitted a small leak in the pipes, but claimed it was only ¼ of a foot per hour, an amount which would do no harm. They claimed the trouble was caused by fumes from a coal stove, and the jury took that view of the case."

THINK of it! Over 4,000 gas ranges are in use in Decatur, Ills. In 1900 not over 500 were connected up.

THE proprietors of the Clearfield (Pa.) Gas Light Company will expend $20,000 in betterments this summer. Main extensions will take one-half this sum.

WE are indebted to Mr. F. R. Prince for the following: "The damage suit of G. F. Schaller against the Gas Company of Luzerne county, Pa., the main offices of which are in Wilkes-Barre, Pa., came to an unexpected termination through the action of Judge Ferris in granting a compulsory nonsuit. After the plaintiff's testimony had been taken, attorneys James L. Morris and P. F. O'Neil, counsel for the defendant Company, made a motion for a compulsory nonsuit on the ground that the storm and flood that it is alleged caused the damage to the pl intiff's property and personal effects during December, 1901, was of extraordinary proportions and general throughout this section and that the defense had no control of the same, as it was an act of Providence. Attorney James L. Lenahan, counsel for the plaintiff, argued against the granting of the nonsuit, but Judge Ferris sided with the defense and granted the nonsuit. This was the case wherein the plaintiff asked for damages to his personal property due to the defendant Company's gas main extending across Solomon's Creek acting as a barrier and causing the debris floating on the high water to form a dam and forcing the water back over the Schaller premises to the depth of many feet. When the case was tried before Judge Halsey in April the defense also moved for a compulsory nonsuit on the same grounds as before Judge Ferris recently, but Judge Halsey refused to grant it and decided that the case should go to the jury, which disagreed. Attorney James L. Lenahan, after the nonsuit was granted at once, applied to Judge Ferris for a rule to show cause why the non-suit should not be stricken off. The rule was granted and made returnable at the September term of argument court."

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NOTIFICATION RESPECTING ADVERTISING.

Orders for new advertising, or for changes in standing advertisements, to insure attention in the issue following their reception, must be in hand any time of Wednesday.

AGENTS:

New York—American News Co., 39 and 41 Chambers St.
Germany—Lemcke & Buechner, of New York.
England—Aug. Siegle, 30 Lime Street, London.

MONDAY, JULY 8, 1907.

The Market for Gas Securities.

Steadiness was the characteristic of the local gas share market last week, but trading continued light. It opened to-day (Friday) at 118 to 120. Brooklyn Union is absolutely lifeless, nominal figures being 100 to 112. Quite some inquiry for bonds is noted.

Outside shares are all firmer, notably Peoples, of Chicago, which is 92½ bid. Massachusetts common is being steadily absorbed at 58 to 58½, while 83 is bid for the preferred. Wilmington (Del.) gas suffers some from the raiding scheme now underway there, but as the Messrs. Dobson are on the job investment holders need have no fear as to the outcome. Cincinnati Gas and Electric is 98 to 98½, and Gas and Fuel, of Columbus, O., is steadily going on to par.

Gas Stocks.

Quotations by George W. Cleese, Broker and Dealer in Gas Stocks.

16 WALL STREET, NEW YORK CITY.

JULY 8

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share.

N. Y. City Companies	*Capital*	*Par.*	*Bid.*	*Asked.*
Consolidated	$73,177,000	100	118	120
Central Union Gas Co.—				
1st 5's, due 1972, J. & J.	3,000,000	1,000	101	104
Equitable Gas Light Co.—				
Con. 5's, due 1932, M. & S.	1,000,000	1,000	..	105
Mutual	3,500,000	100	190	235
New Amsterdam Gas Co.—				
1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	98	100
New York & Richmond Gas Co. (Staten Island)	1,500,000	100	37	43
1st Mtg. Gold Bds. 5 p.ct.	1,000,000	..	98	104
Northern Union—				
1st 5's, due 1927, J. & J.	1,250,000	1,000	101	103
New York and East River—				
1st 5's, due 1944, J. & J.	3,500,000	1,000	108	111
Con. 5's, due 1945, J. & J.	1,500,000	..	104	110
Standard	5,000,000	100	140	160
Preferred	5,000,000	100	155	175
1st Mtg. 5's, due 1930, M. & N	1,500,000	1,000	104	108
The Brooklyn Union	15,000,000	1,000	100	112
1st Con. 5's, due 1948, M. & N	15,000,000		107	..
Yonkers	299,850	500	130	..
Out-of-Town Companies.				
Bay State	50,000,000	50	¼	⅜
" Income Bonds	2,000,000	1,000	..	75
Binghamton Gas Works	450,000	100	..	65
" 1st Mtg 5's	509,000	1,000	95	100
Boston United Gas Co.—				
1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47¼	50
Buffalo City Gas Co.	5,500,000	100	9	10
" " Bonds, 5's	5,350,000	1,000	75	80
Capital, Sacramento	500,000	50	..	35
Bonds (6's)	150,000	1,000	..	..
Chicago Gas Co. Guaranteed Gold Bonds	7,650,000	1,000	104	106¾
Cincinnati Gas and Electric Co.	29,500,000	100	98	98½
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	90	..
Columbus (O.) Gas Lt. & Heating Co	1,682,750	100	87	88
Preferred	3,036,500	100	107½	108
Consumers, Toronto	2,000,000	50	200	204
Consolidated, Baltimore	11,000,000	100	..	90
Mortgage, 6's	3,500,000	..	..	118
Chesapeake, 1st 6's	1,000,000	..	..	..
Equitable, 1st 6's	910,000	..	..	..
Consolidated, 1st 5's	1,490 000	..	..	112
Consolidated Gas Co. of N. J.	1,000,000	100	15	17
Con. Mtg. 5's	880,000	1,000	92	95
Bonds	75,000	..	..	100
Detroit City Gas Co	5,000,000	50	..	50
Prior Lien 5's	4,618,000	1,000	..	98
Detroit Gas Co., 5's	381,000	1,000	75	80
Inc. 5's	16,000	100	98½	100
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	..	101
Essex and Hudson Gas Co.	6,500,000	..	39	40
Fort Wayne	2,000,000	..	..	..
Bonds	2,000,000	..	55	..
Grand Rapids Gas Lt. Co. 1st Mtg. 5's	1,225,000	1,000	104½	105
Hartford	750,000	25	190	200
Hudson County Gas Co., of New Jersey	10,500,000	..	110	112
Bonds, 5's	10,500,000	..	107½	108½
Indianapolis	2,000,000	..	60	70
" Bonds, 5's	3,650,000	..	104½	105
Jackson Gas Co	250,000	50	82	..
" 1st Mtg. 5's	290,000	1,000	97	100
Kansas City Gas Light Co., of Missouri	5,000,000	100	..	36
Bonds, 1st 5's	3,822,000	1,000	102	104
Laclede, St. Louis	10,000,000	100	..	05
Preferred	2,500,000	100	95	110
Bonds	10,000,000	1,000	104	104¼
Lafayette Gas Co., Ind.	1,000,000	100	..	50
Bonds	1,000,000	1,000	60	65
Louisville	2,570,000	50	143	145
Madison Gas & Elec. Co.				
" 1st Mtg. 6's	350,000	1,000	106	108¾
" 6 per cent. scrip, due 1910	100,000	25	16	53
Massachusetts Gas Companies of Boston	25,000,000	100	58	58¼
Preferred	25,000,000	100	83	83¼
Montreal, Canada	2,000,000	100	218	218¾
Nashville Gas Lt. Co.	1,000,000	100	110	.
Newark, N. J., Con. Gas Co.	6,000,000	..	56	58
Bonds, 6's	6,000,000	..	137	138
New Haven	2,000,000	25	200	..
Peoples G. L. & Coke Co., of Chicago	25,000,000	100	92¼	92¾
Peoples Gas Lt. & Coke Co., Chicago, 1st Mortgage	20,100,000	1,000	..	..
" 2d "	2,500,000	1,000	104	..
Rochester Gas & Elec. Co.	2,150,000	50	88	..
Preferred	2,150,000	50	118	..
Consolidated 5's	2,000,000	..	104½	105¼
San Francisco, Cal.	15,800,000	100	..	..
St. Joseph Gas Co. 1st Mtg. 5's	751,000	1,000	92	..
St. Paul Gas Light Co	1,500,000	100	45	47
1st Mortgage 6's	650,000	1,000	113	116
Extension, 6's	600,000	1,000	112¾	115
General Mortgage, 5's	2,465,000	1,000	96¼	..
Syracuse, N. Y.	1,975,000	100	50	55
Bonds	2,047 000	1,000	102	..
Washington, D. C	2,600,000	20	340	345
First mortgage 6's	600,000	..	..	..
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DIVIDEND NOTICE.

OFFICE OF THE UNITED GAS IMPROVEMENT CO., N. W. CORNER BROAD AND ARCH STS., PHILADELPHIA, PA., June 12, 1907.

The Directors have this day declared a quarterly dividend of 2 per cent. (one dollar per share), payable July 15th, 1907, to stockholders of record at the close of business, June 29, 1907. Checks will be mailed.

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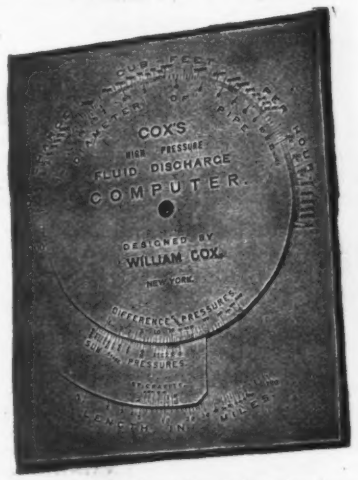

This Computer solves the following formula, which is applicable to Gas, Air and other elastic fluids, flowing through long pipes with high initial pressures:

Discharge in cubic feet per hour at atmospheric pressure $= 33.3 \sqrt{\frac{d^5 \times (p_1^2 - p_2^2)}{L \times w}}$

Where

d = diameter of pipe in inches,
p_1 = absolute initial pressure in pounds per square inch,
p_2 = absolute terminal pressure in pounds per square inch,
L = length of pipe in miles,
w = specific gravity of the fluid when air = 1.

To Find the Discharge from a Pipe and the Required Size of Pipe.

(1.) Set the specific gravity of the fluid opposite the length of pipe;

(2.) Bring the DIFFERENCE of the initial and terminal gauge pressures opposite the SUM of the initial and terminal gauge pressures;

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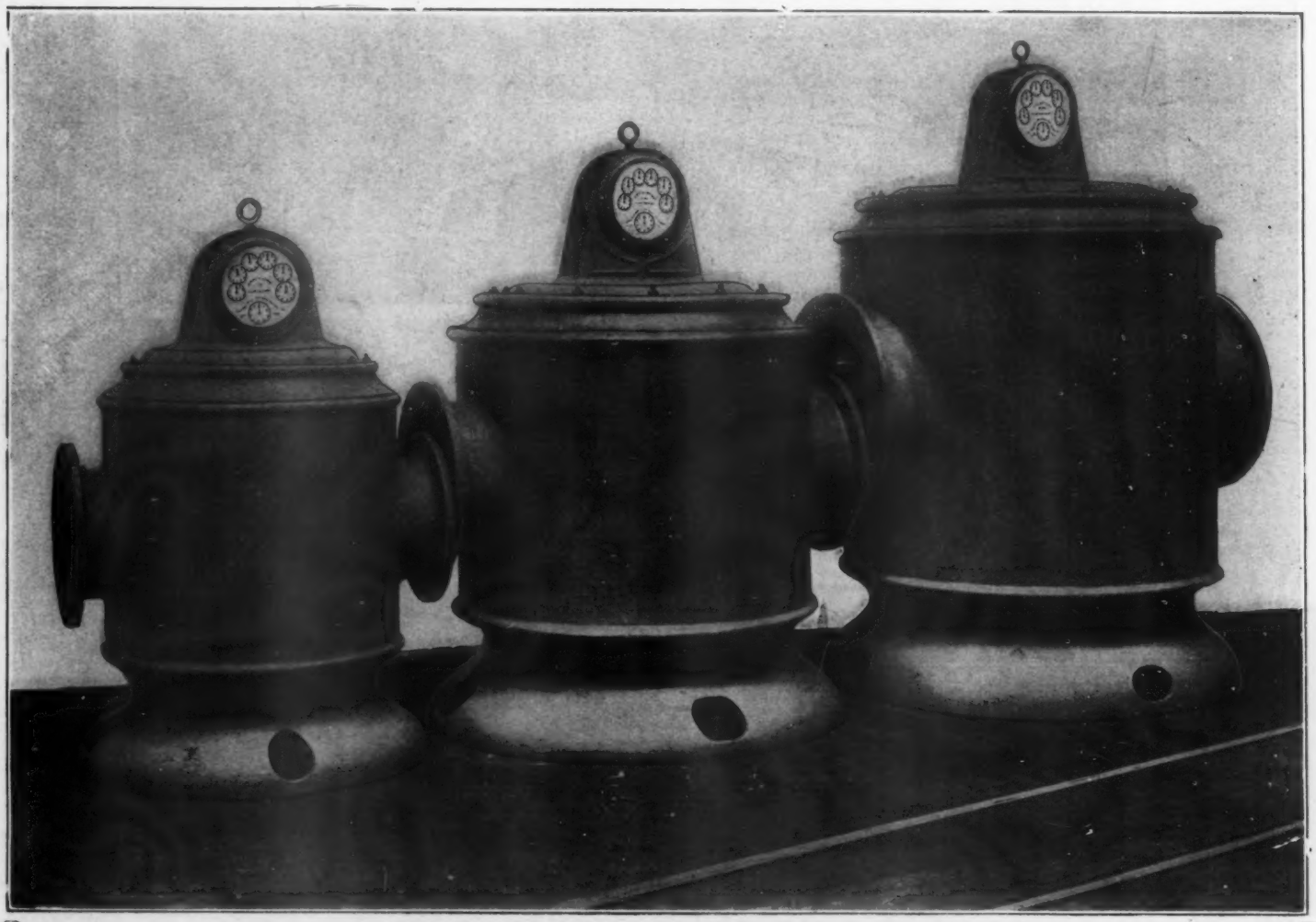

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FOR NORWICH, N. Y.	FOR EL PASO, TEXAS.	FOR CHESTER, PA.

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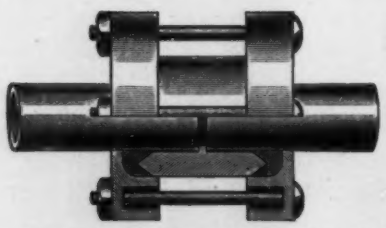

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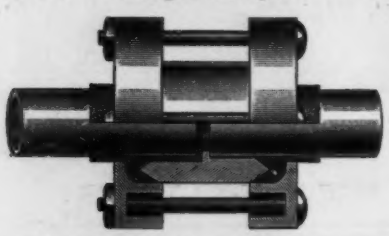

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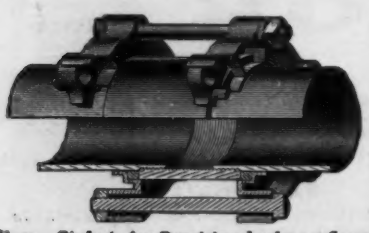

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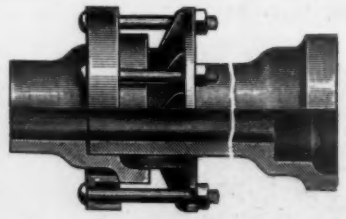

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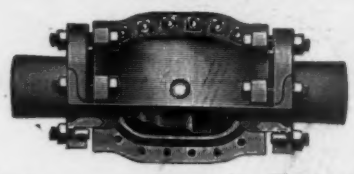

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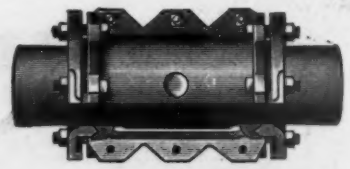

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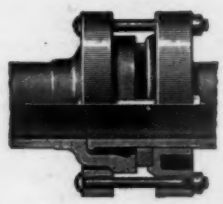

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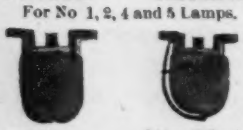

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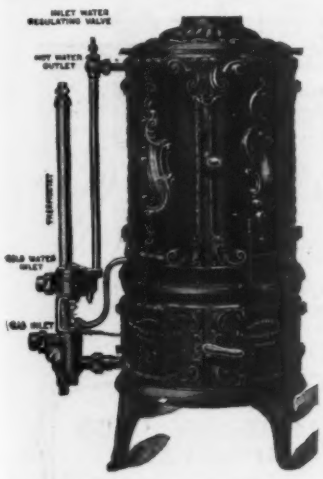

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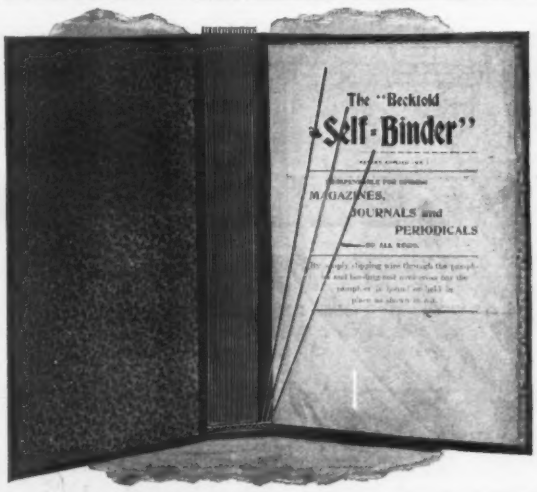

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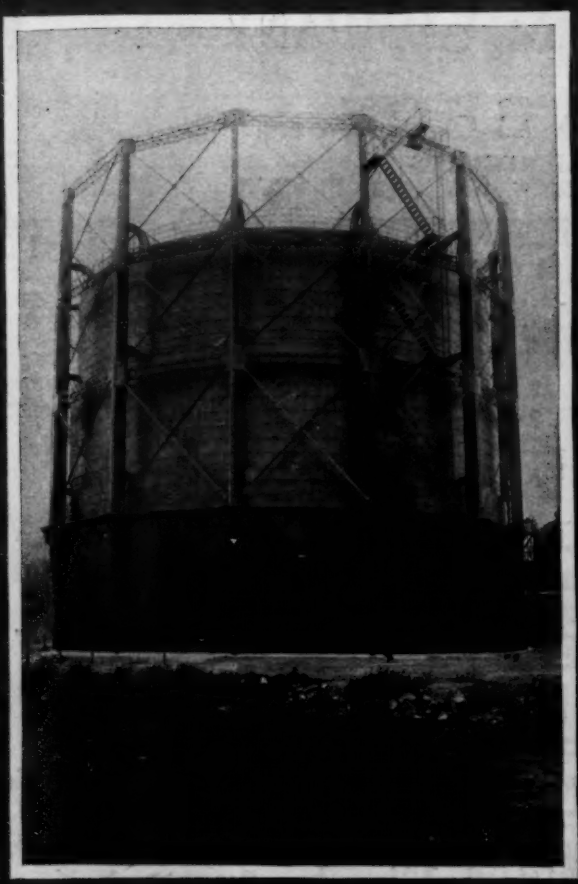

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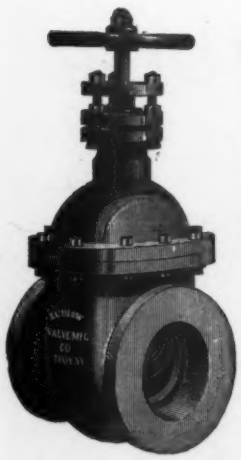

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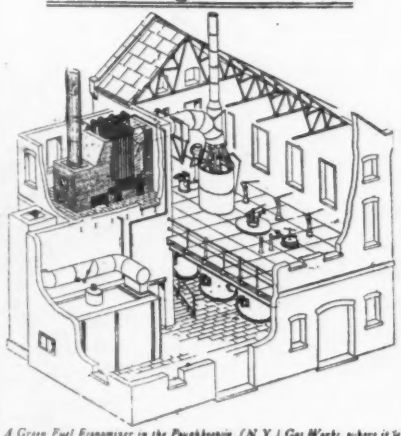

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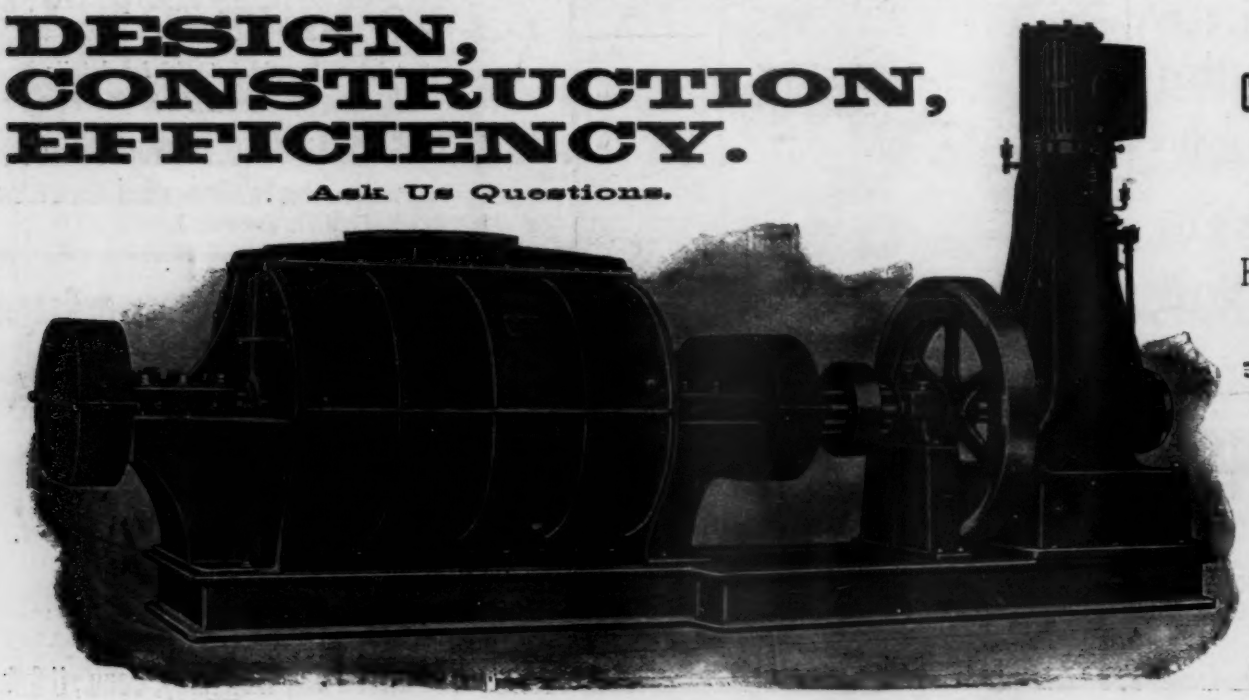

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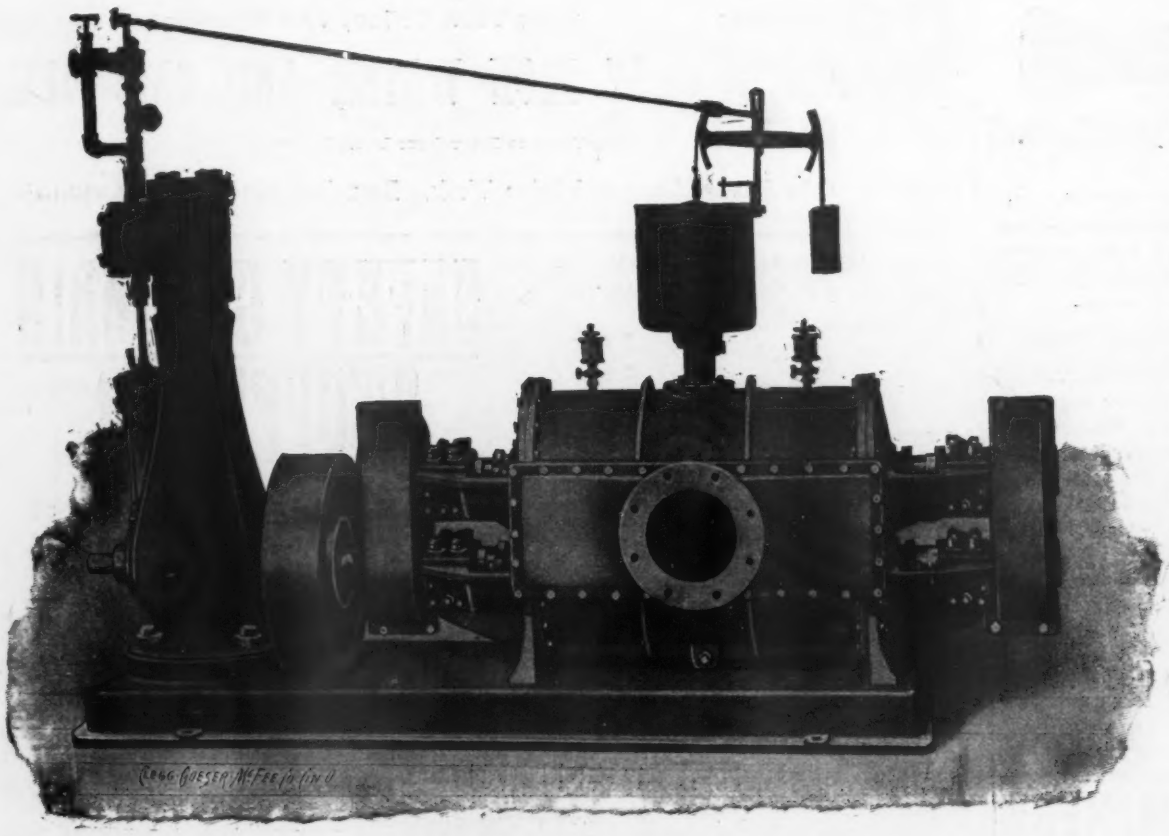

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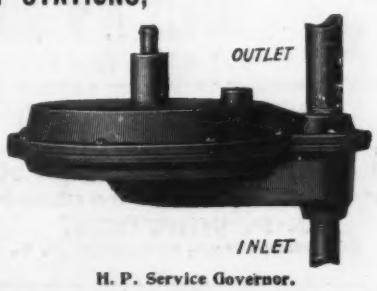

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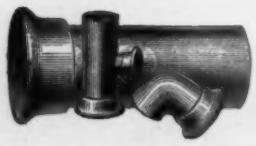

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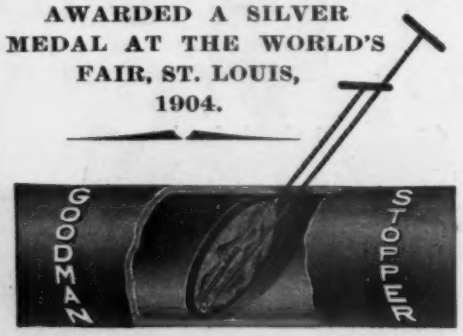

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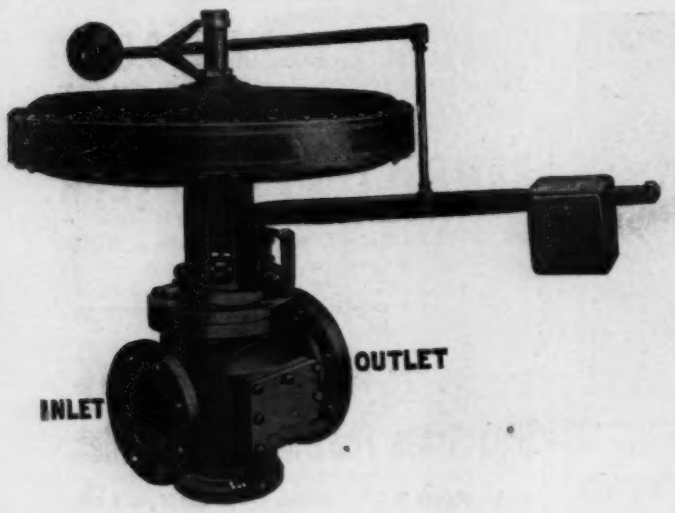

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Photometrical and Experimental Apparatus.

PUBLIC LIGHTING TABLE.

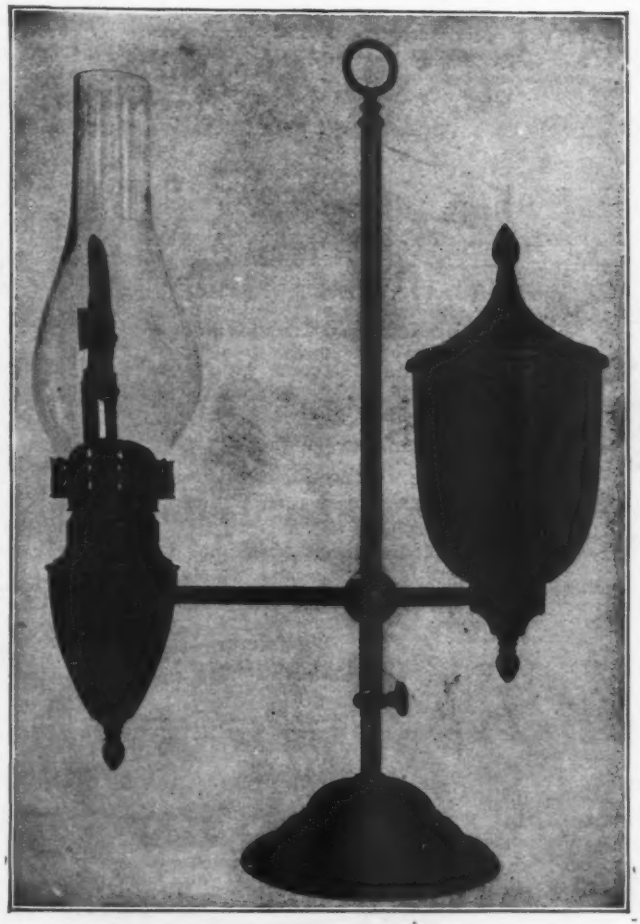
JULY, 1907.

Day of Week.	Date.	Table No. 1. FOLLOWING THE MOON. Light.	Extinguish.
Mon.	1	8.00 PM	1.00 AM
Tue.	2	8 00 LQ	1.30
Wed.	3	8 00	1.50
Thu.	4	8.00	2.20
Fri.	5	8.00	2.50
Sat.	6	8.00	3.30
Sun.	7	8 00	3.40
Mon.	8	8.00	3.40
Tue.	9	8 00	3.40
Wed.	10	8.00 NM	3.40
Thu.	11	8 00	3.40
Fri.	12	8.00	3.40
Sat.	13	8.00	3.40
Sun	14	8 00	3.40
Mon.	15	9.30	3.40
Tue.	16	10.00	3.40
Wed.	17	10.30	3.40
Thu.	18	11.00 FQ	3.40
Fri.	19	11.40	3.40
Sat.	20	12.10 AM	3.40
Sun.	21	1.00	3.50
Mon.	22	2.00	3.50
Tue.	23	No L.	No L.
Wed.	24	No L FM	No L.
Thu.	25	No L.	No L.
Fri.	26	7.50 PM	9.40 PM
Sat.	27	7.50	10.20
Sun.	28	7.50	10.50
Mon.	29	7.50	11.30
Tue.	30	7.50	12.00
Wed.	31	7.50 LQ	12 20 AM

TOTAL HOURS DURING 1907.

By Table No. 1.

	Hrs.Min.
January	211.10
February	193.40
March	182.10
April	167.00
May	157.00
June	145.30
July	151.50
August	162.30
September	175.30
October	202.40
November	209.30
December	231.50
Total, yr.	2190.20



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10-Candle Power.

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This lamp is a perfect substitute for the 10-candle Pentane Lamp hitherto used, and has the following advantages:

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2d. It is remarkably steady. Will burn 24 hours continuously with less than 2 per cent. variation.

3d. It is much less dangerous than Pentane, which is a kind of gasolene.

4th. It is not easily affected by air currents in the photometer room.

5th. Since the lamp may burn continuously, the candle power of gas may be taken at any moment, if necessary. This insures steady illuminating power without waste of carburetting material.

6th. The first cost of the lamp brings it within the reach of even small gas works.

7th. Costs much less to maintain than a Pentane lamp or sperm candles doing the same service.

8th. Is not affected by the weather.

PUBLIC LIGHTING TABLE.

JULY, 1907.

Day of Week.	Date.	Table No. 2. NEW YORK CITY. All Night Lighting. Light	Extinguish.
		P. M.	A.M.
Mon.	1	7.30	3.15
Tue.	2	7.30	3.15
Wed.	3	7.30	3.15
Thu.	4	7.30	3.15
Fri.	5	7.30	3.15
Sat.	6	7.30	3.15
Sun.	7	7.30	3.15
Mon.	8	7.30	3.15
Tue.	9	7.30	3.15
Wed.	10	7.30	3.15
Thu.	11	7.30	3.15
Fri.	12	7.30	3.15
Sat.	13	7.30	3.15
Sun.	14	7.30	3.15
Mon.	15	7.30	3.15
Tue.	16	7.20	3.15
Wed.	17	7.20	3.15
Thu.	18	7.20	3.15
Fri.	19	7.20	3.15
Sat.	20	7.20	3.15
Sun.	21	7.20	3.15
Mon.	22	7.20	3.15
Tue.	23	7.20	3.15
Wed.	24	7.20	3.15
Thu.	25	7.20	3.15
Fri.	26	7.20	3.15
Sat.	27	7.20	3.15
Sun.	28	7.20	3.15
Mon.	29	7.20	3.15
Tue.	30	7.10	3.30
Wed.	31	7.10	3 30

TOTAL HOURS DURING 1907.

By Table No. 2.

	Hrs.Min.
January	423.20
February	355.25
March	355.35
April	298.50
May	264.50
June	234.25
July	243.45
August	280.25
September	321.15
October	374.30
November	401.40
December	433.45
Total, yr.	3987.47

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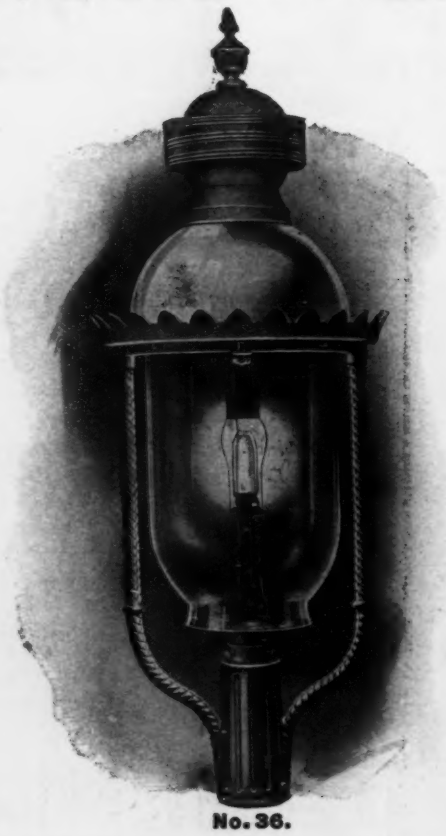
....OF AMERICA....



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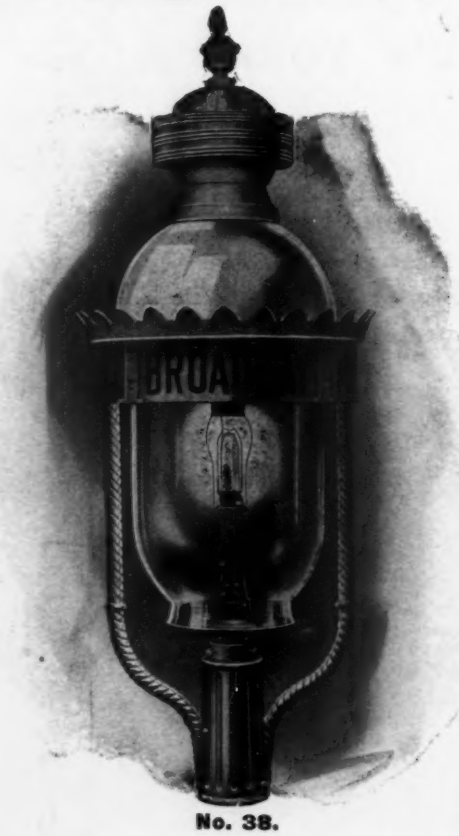

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Waterbury, Conn.
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Allentown, Pa.
Omaha, Neb.
Muskegon, Mich.
Nazareth, Pa. (2d contract).
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Leominster, Mass. (2d contract).
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TOTAL SETS INSTALLED IN 1906, ... 41
TOTAL SETS TO DATE, ... 634
TOTAL DAILY CAPACITY, ... 502,555,000 cu. ft.

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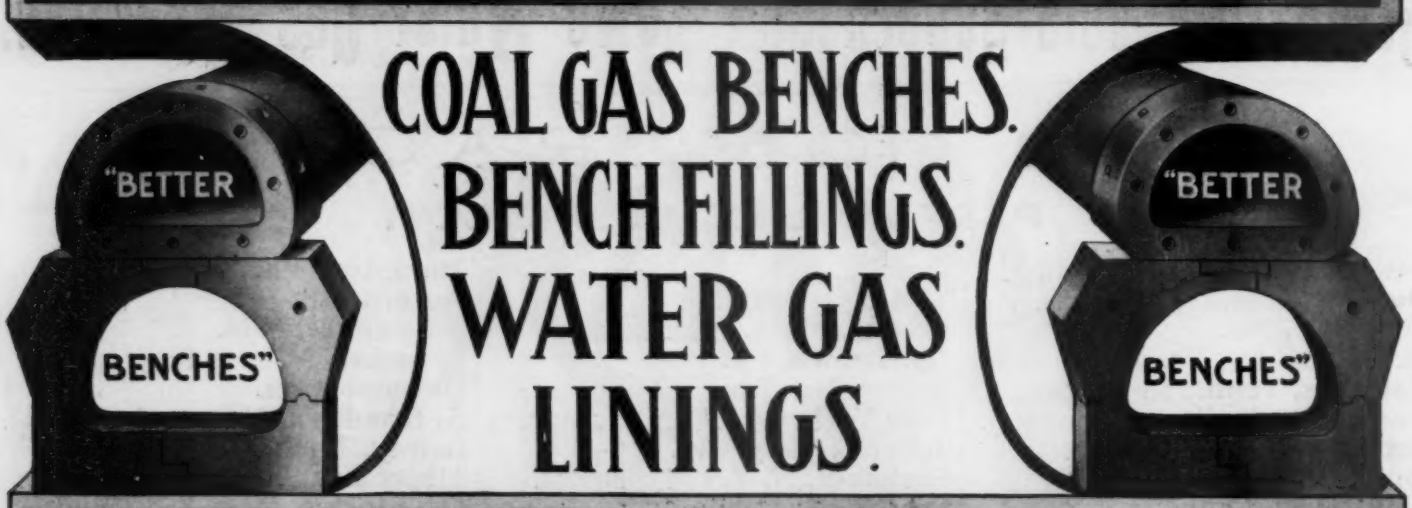

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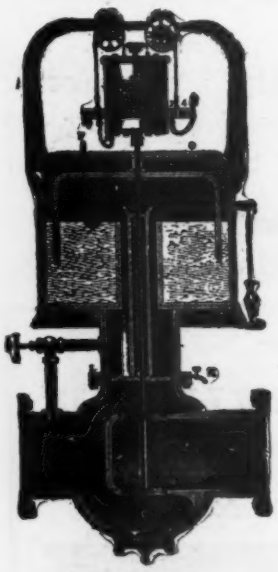

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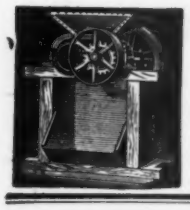

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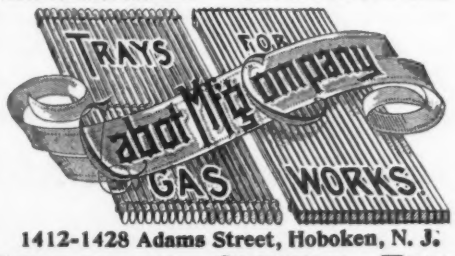

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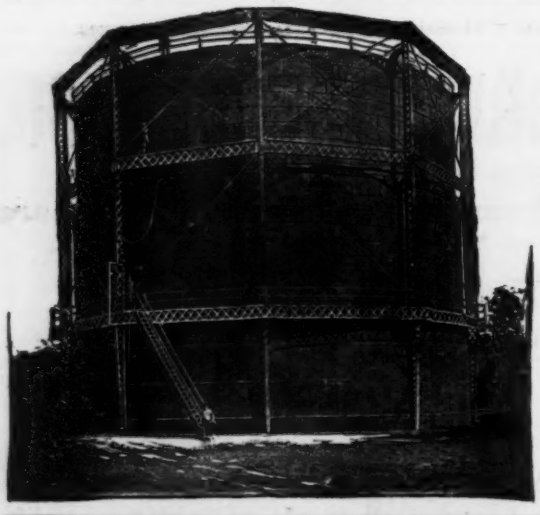

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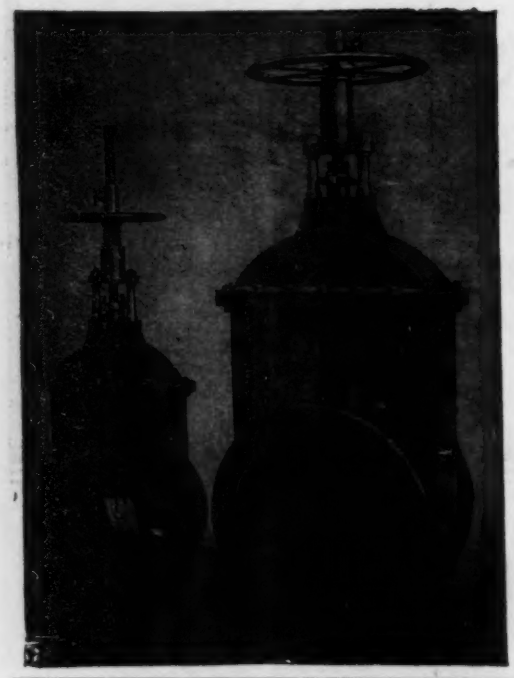

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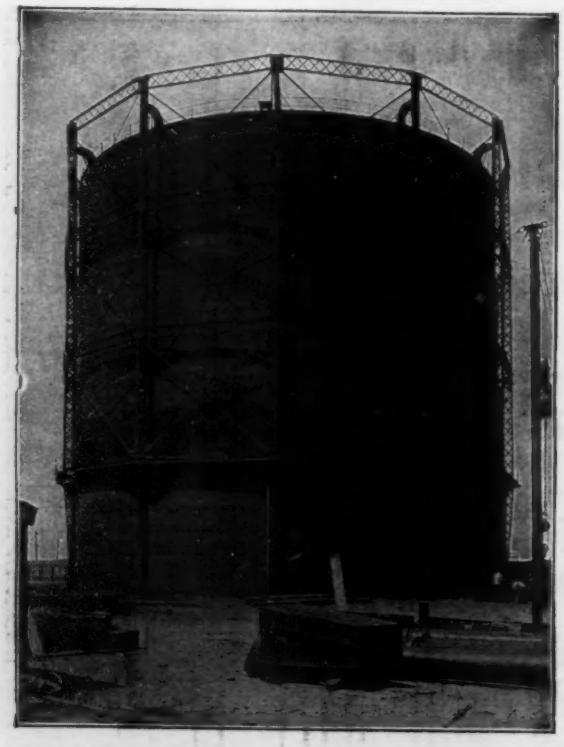

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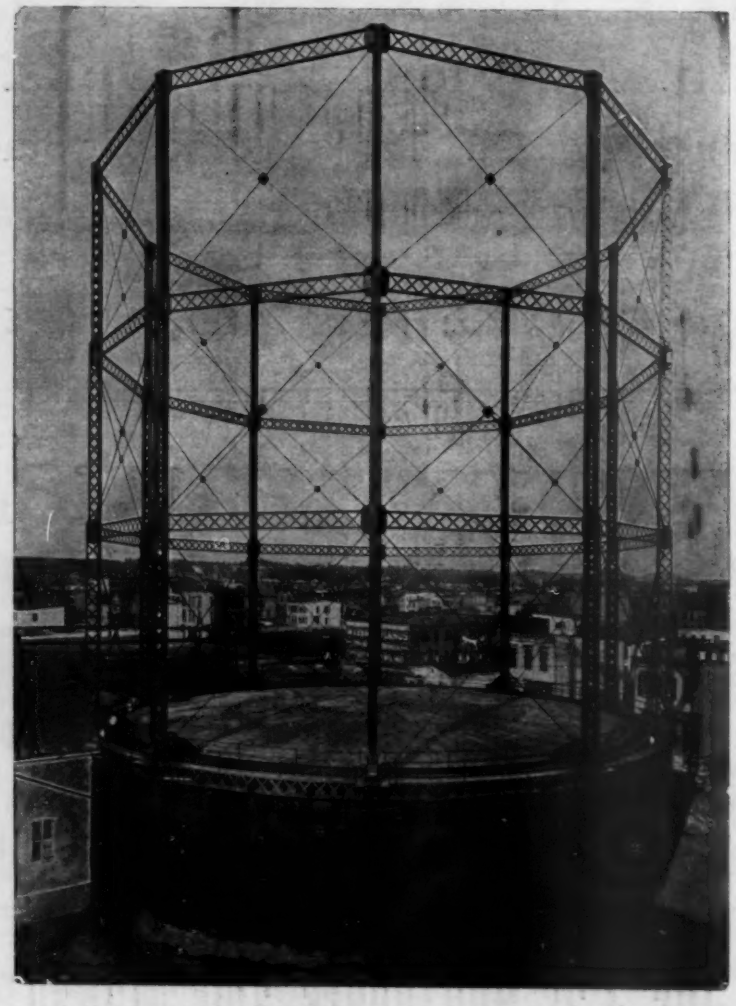

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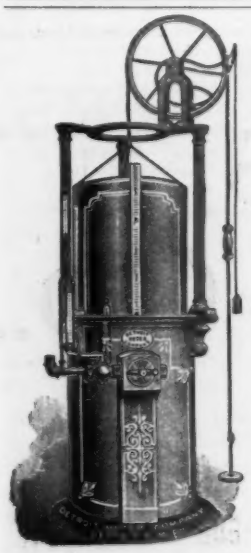

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